

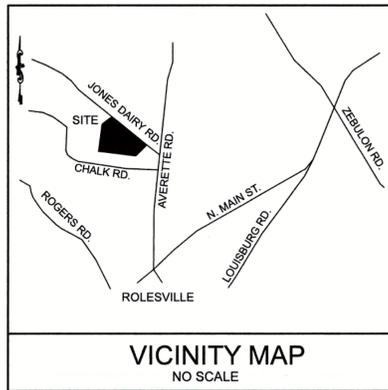
Construction Plans

Preserve at Jones Dairy South

Town of Rolesville
Wake County, North Carolina

Preserve at Jones Dairy, LLC

10534 Arnold Palmer Drive
Raleigh, NC 27617



Public Improvement Quantities			
Improvement	Phase 1	Phase 2	Phase 3
Lots by Phase	123	34	59
Number of Units	123	34	59
Amenity Lots	1		
Public Water 12"	1506		
Public Water 8" LF	5746		
Public 8" Sewer (PVC) LF	7373		
Public 8" Sewer (Ductile) LF	838		
Water Service Stubs	124	34	59
Sewer Service Stubs	124	34	59

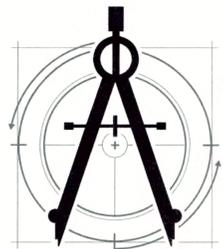
Note:

A rule to protect and maintain existing buffers along watercourses became effective on July 22, 1997. The Neuse River Riparian Area Protection and Maintenance Rule (15A NCAC 28.0233) applies to all perennial and intermittent streams, lakes, ponds and estuaries in the Neuse River Basin with forest vegetation on the adjacent land or "riparian area".

Note:

These plans are prepared for local and state permitting only and are not released for construction until approved by all entities listed below:

- Approved by Wake County: (Erosion Control Only)
- Approved by the City of Raleigh: (Water and Sewer system only)
- Approved by the Town of Rolesville: (Streets, Storm Drainage, Site only)
- Approved by NCDOT: (Jones Dairy Road widening only)



caaENGINEERS, Inc.

McIntyre, Gettle, Crowley

PROFESSIONAL ENGINEERS

1233 Heritage Links Drive, Wake Forest, North Carolina 27587
4932B Windy Hill Drive, Raleigh, North Carolina 27609
(919)625-6755

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SITE PERMITTING APPROVAL
Water and Sewer Permits (If applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # S-4800

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval _____
Raleigh Water Review Officer

ATTENTION CONTRACTORS

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EROSION CONTROL, STORMWATER AND FLOODPLAIN MANAGEMENT

APPROVED

EROSION CONTROL SEC-004557-2020

STORMWATER MGMT. S+F-004559-2020

FLOOD STUDY S-

DATE 2-22-21

ENVIRONMENTAL CONSULTANT SIGNATURE
JN'

Rolesville

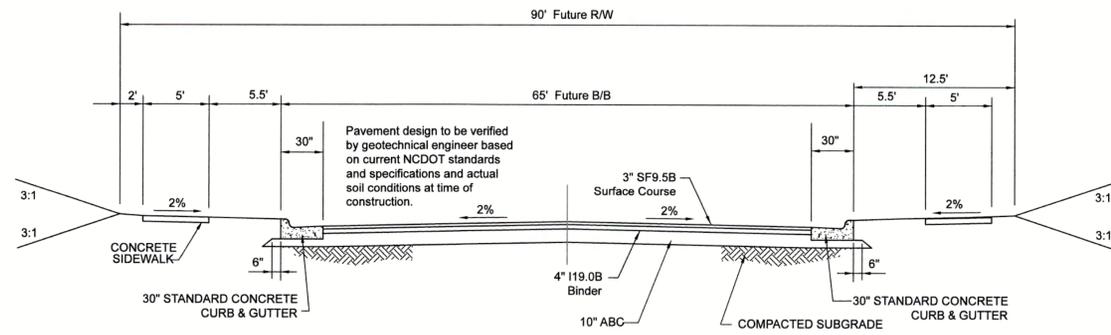
APPROVED FOR COMPLIANCE

Case #CD20-03 Project: Preserve at Jones Dairy South

By: Danny Johnson Date: 3/4/2021

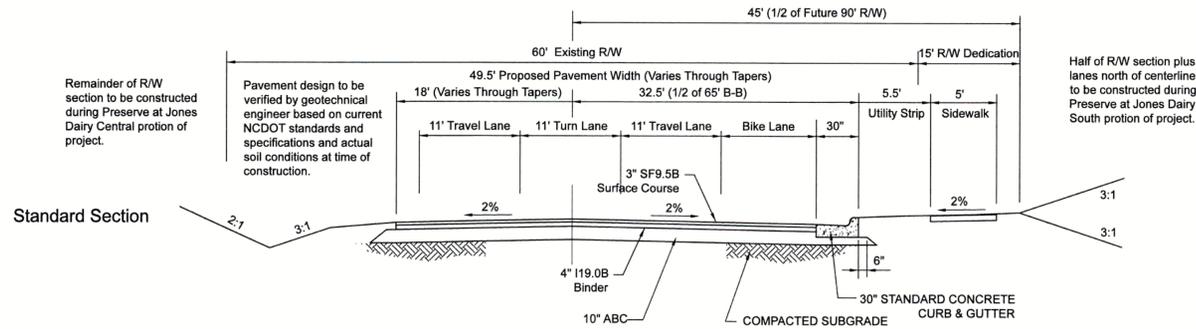
These plans have been approved for compliance with the Town Code of Ordinance, UDO, and Standard Specifications & Construction Details, subject to statements & conditions hereby incorporated by reference.

These plans have been prepared using the best information available from field surveys performed by others, site observations, and other available information. Existing underground facilities and subsurface conditions indicated on these drawings is limited to and is only as accurate as the information presented to us by field surveys performed by others, and the engineer makes no warranty to any party regarding the presence or absence of underground features whether shown on these plans or not. Existing utility line locations shown should be considered approximate, and actual utilities and conditions may differ from those indicated. Surface or buried rock, unsuitable material, or other soil conditions may be encountered during construction. Generally, these conditions are not noted on these plans. It should be expected by the Owner and Contractor that unforeseen conditions may or will arise during construction that may require modification of these design plans by the Engineer. Should unforeseen conditions be encountered during construction, it is the responsibility of the Owner and Contractor to notify the Engineer prior to construction of the nature and extent of such conditions so that timely and appropriate measures can be taken to revise these plans as necessary to accommodate conditions encountered in the field.

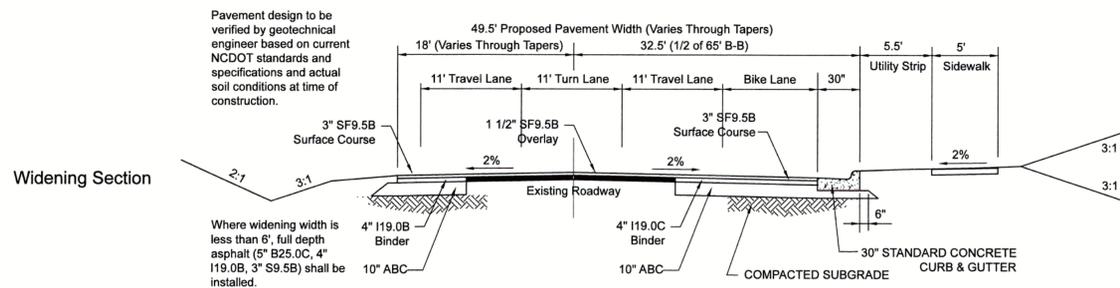


Future Jones Dairy Road (65' B-B in a 90' R/W)

NOT TO SCALE



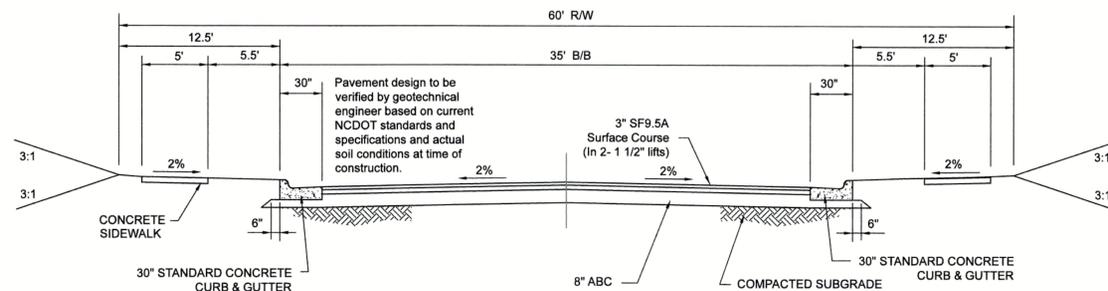
Standard Section



Widening Section

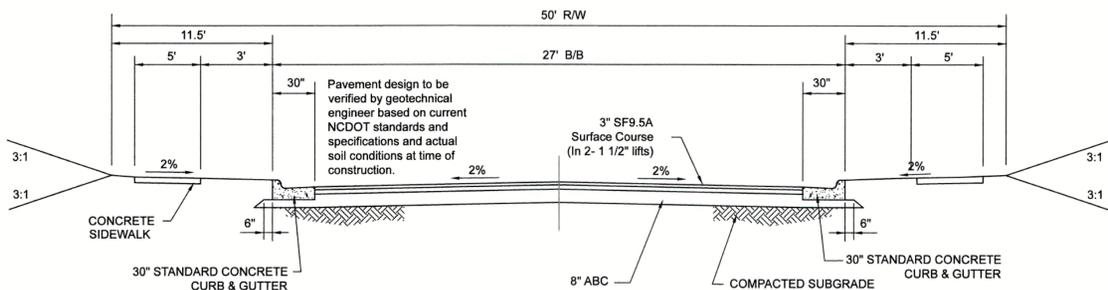
Jones Dairy Road Widening (South)

NOT TO SCALE



Residential Collector (60' R/W)

NOT TO SCALE



Residential Street (50' R/W)

NOT TO SCALE

R&PUD PERMITTED USES

R1	53.53 ACRES
R2	0 ACRES
R3	0 ACRES
RM	0 ACRES
G	1.03 ACRES

SITE DEVELOPMENT DATA

ZONING PROPOSED:	R & PUD
TOWNSHIP:	ROLESVILLE, NC
COUNTY:	WAKE
RIVER BASIN:	NEUSE
GROSS TRACT AREA:	54.01 ACRES
SINGLE FAMILY RESIDENTIAL:	53.53 ACRES
JONES DAIRY ROW DEDICATION:	0.48 ACRES
PROPOSED USE:	RESIDENTIAL
EXISTING USE:	VACANT
PROPOSED DEVELOPMENT:	
SINGLE FAMILY DENSITY PROVIDED :	215 / 54.83 = 3.92 UNITS / AC
PROPOSED LOTS:	215
LOT SIZE:	6000 SF (MIN) - 19,485.1 SF (MAX)
LOT WIDTH:	50 FT (MIN)
SETBACKS:	
FRONT:	25 FT
REAR:	25 FT
SIDE:	5 FT (0-10 AGGREGATE)
SIDE (CORNER LOTS):	10 FT (SIDE FRONTING ROW)
RECREATION AND OPEN SPACE:	
TOTAL SITE AREA REQUIRED (10%):	53.53 x .10 = 5.35 ACRES
IMPROVED AREA REQUIRED:	5.35 x .5 = 2.67
TOTAL AREA PROVIDED:	7.59 ACRES (14.2%)
IMPROVED AREA PROVIDED:	4.56 ACRES
UNIMPROVED AREA PROVIDED:	3.03 ACRES

PROJECT INFORMATION:

PROJECT: THE PRESERVE AT JONES DAIRY - SOUTH PRELIMINARY PLAT

OWNER/DEVELOPER: PRESERVE AT JONES DAIRY, LLC
10534 ARNOLD PALMER DRIVE
RALEIGH, NC 27617
(919) 422-1847

PHONE: (919) 422-1847
CONTACT: GLEN HARTMAN
EMAIL: GLEN.HARTMAN@CAPITOLCITY-HOMES.COM

ENGINEER: MICHAEL CROWLEY, PE
caaENGINEERS, INC.
1233 HERITAGE LINKS DRIVE
WAKE FOREST, NC 27587
(919) 625-6755
EMAIL: MCROWLEY@CAAENGINEERS.COM

PHONE: (919) 625-6755
EMAIL: MCROWLEY@CAAENGINEERS.COM

SURVEYOR: CMP LAND SURVEYORS (MIKE MOSS)
333 SOUTH WHITE STREET, WAKE FOREST NC, 27587
(919) 556-3148

PHONE: (919) 556-3148

PROJECT ADDRESS: JONES DAIRY ROAD, ROLESVILLE, NC
PIN: 1759-88-8240, 1759.02-88-8240, 1759.02-78-6199

ZONING: R & PUD
EXIST USE: VACANT
FLOOD ZONE: NONE - FEMA FIRM MAP 3720175900J

SITE NOTES

1. PROPERTY BOUNDARY AND EXISTING CONDITIONS INFORMATION TAKEN FROM A FIELD SURVEY BY CAWTHORNE, MOSS AND PANCIERA, ENTITLED "SURVEY FOR JVC", DATED APRIL, 2018.
2. WETLANDS AND STREAMS HAVE RECEIVED PRELIMINARY JURISDICTION DELINEATION FROM NC DIVISION OF WATER RESOURCES.
3. NO FLOOD HAZARD AREAS WITHIN PROJECT BOUNDARY PER FEMA MAP 37201755900J, DATED MAY 2, 2006.

GENERAL NOTES

1. PROJECT AMENITIES TO BE REVIEWED BY THE TOWN OF ROLESVILLE DURING SITE / CONSTRUCTION PLAN SUBMITTAL.
2. PROJECT LANDSCAPE BUFFERS WILL BE MAINTAINED BY THE "PRESERVE AT JONES DAIRY" HOME OWNERS ASSOCIATION.
3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF ROLESVILLE, WAKE COUNTY, NCDOT AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS.



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NO.	DATE	BY	REVISION DESCRIPTION
1	06/08/2020	MAC	Primary Construction Plans
2	10/23/2020	MAC	Revised per 1st review comments
3	11/26/2020	MAC	Town, Raleigh Comments
4	01/11/2021	MAC	Town Comments
5	02/12/2021	By	Issued for signature approval
6		By	Comment
7		By	Comment
8		By	Comment



Design Notes
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

Job No. JDF
Dwg No. C1



TYPICAL MAILBOX KIOSK DETAIL

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3. NO FLOOD HAZARD AREAS WITHIN PROJECT BOUNDARY PER FEMA MAP 37201755900J , DATED MAY 2, 2006.
4. ALL STRIPING TO BE THERMOPLASTIC.
5. POOL AND AMENITY AREAS TO BE SUBMITTED UNDER SEPARATE APPLICATION.

PHASING DATA

- Phase 1:** 122 Lots
Phase 2: 34 Lots
Phase 3: 59 Lots
Total: 215 Lots

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

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City of Raleigh Development Approval
 Raleigh Water Review Officer

ATTENTION CONTRACTORS

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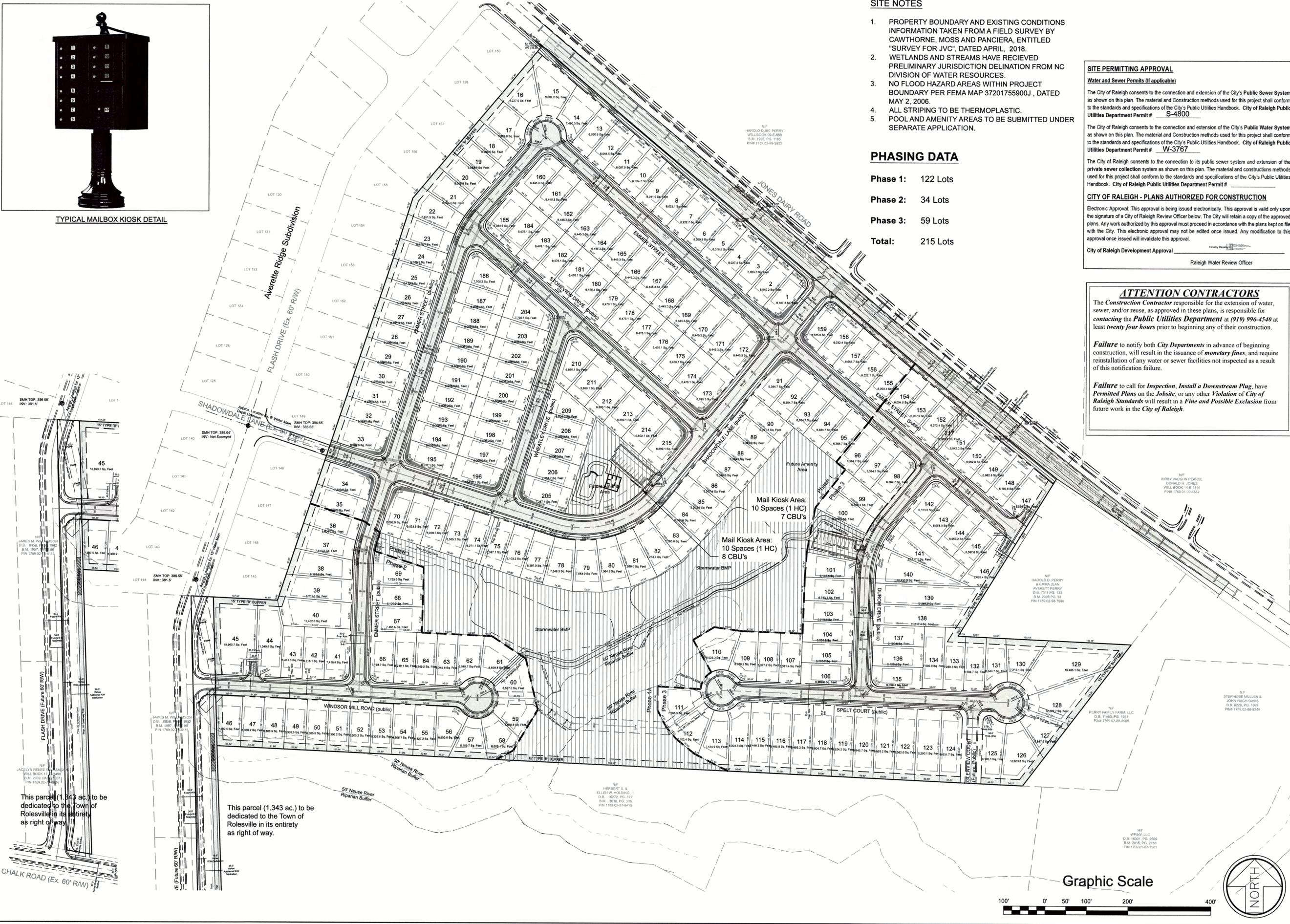


NO	DATE	REVISION DESCRIPTION	BY
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3	11/26/2020	Town, Raleigh Comments	MAC
4	01/11/2021	Issued for signature approval	By
5	02/12/2021	Comment	By
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Digitally signed by Michael Crowley
 Date: 2021.02.12 10:33:02 -0500

Overall Site Plan
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. C3

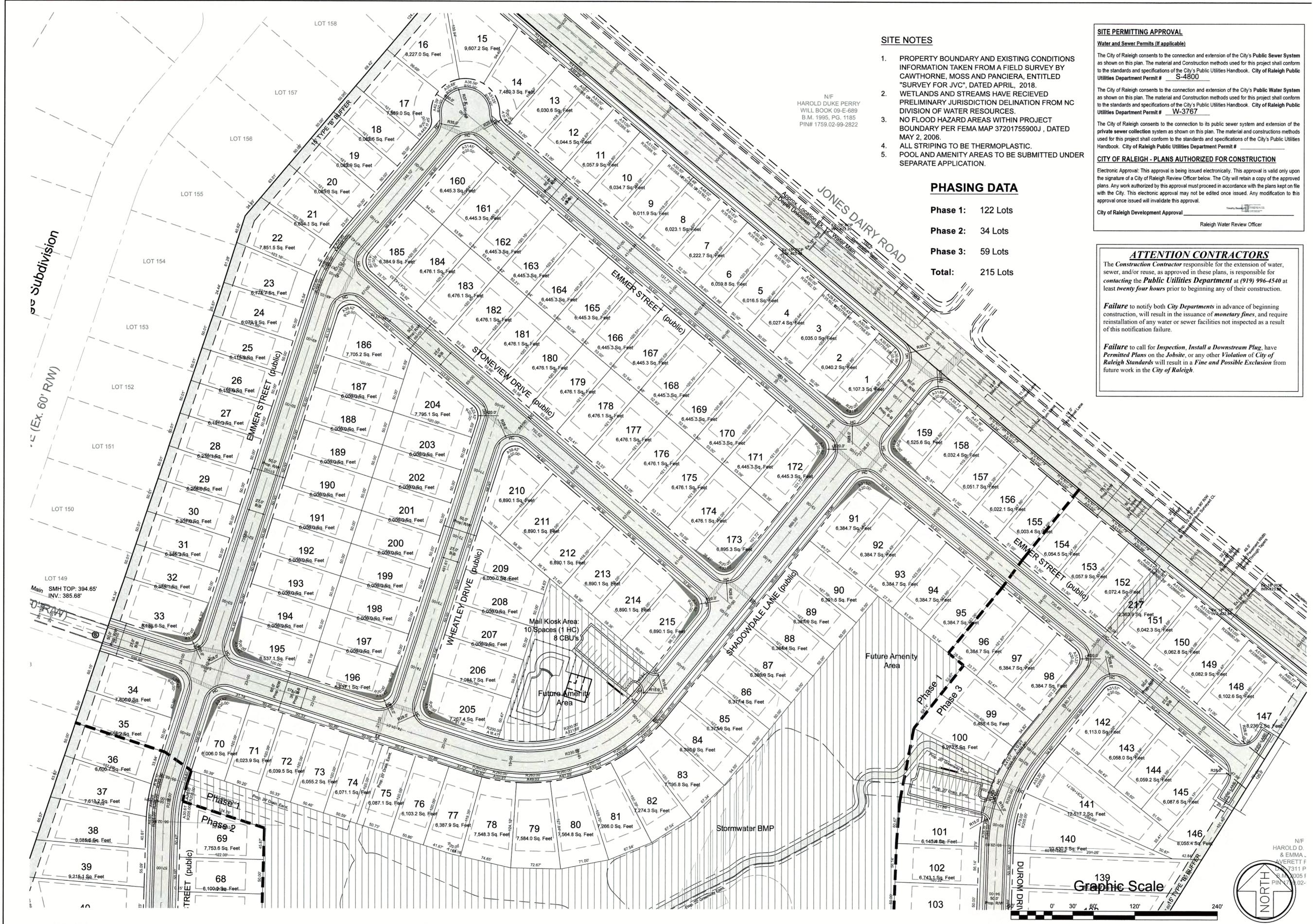


Graphic Scale



This parcel (1.343 ac.) to be dedicated to the Town of Rolesville in its entirety as right of way.

This parcel (1.343 ac.) to be dedicated to the Town of Rolesville in its entirety as right of way.



SITE NOTES

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1	06/09/2020	Preliminary Construction Plans	MAC
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4	01/11/2021	Issue for signature approval	MAC
5	02/12/2021	Issue for signature approval	MAC
6	02/12/2021	Issue for signature approval	MAC
7	02/12/2021	Issue for signature approval	MAC
8	02/12/2021	Issue for signature approval	MAC

Digitally signed by Michael A. Crowley
 Date: 2024.02.12 10:55:05-05'00'

Phase 1 Site Plan
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. **C4**



N/F
 HAROLD DUKE PERRY
 WILL BOOK 09-E-689
 B.M. 1995, PG. 1185
 PIN# 1759.02-99-2822

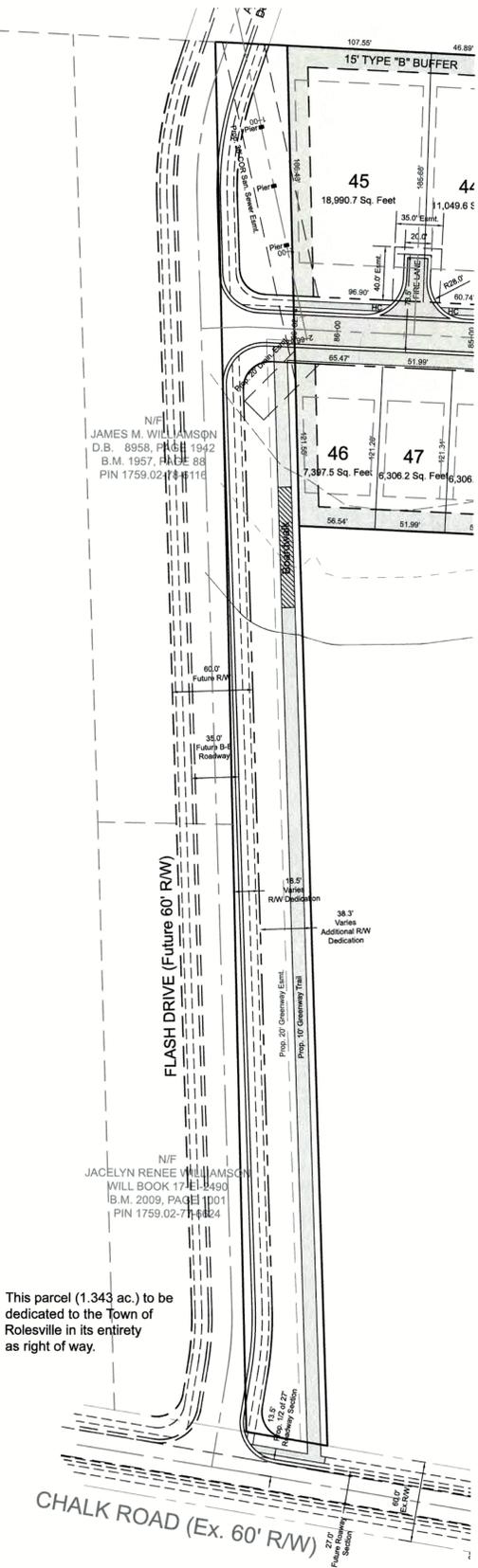
Subdivision
 (Ex. 60' R/W)

SMH TOP: 394.85'
 INV.: 385.88'

Mall Kiosk Area:
 10 Spaces (1 HC)
 8 CBU's

Future Amenity Area

Stormwater BMP



N/F
JAMES M. WILLIAMSON
D.B. 8958, PAGE 1942
B.M. 1957, PAGE 88
PIN 1759.02-7-116

N/F
JACELYN RENEE WILLIAMSON
WILL BOOK 17-E-8490
B.M. 2009, PAGE 1001
PIN 1759.02-7-116

This parcel (1.343 ac.) to be dedicated to the Town of Rolesville in its entirety as right of way.

PHASING DATA **SITE NOTES**

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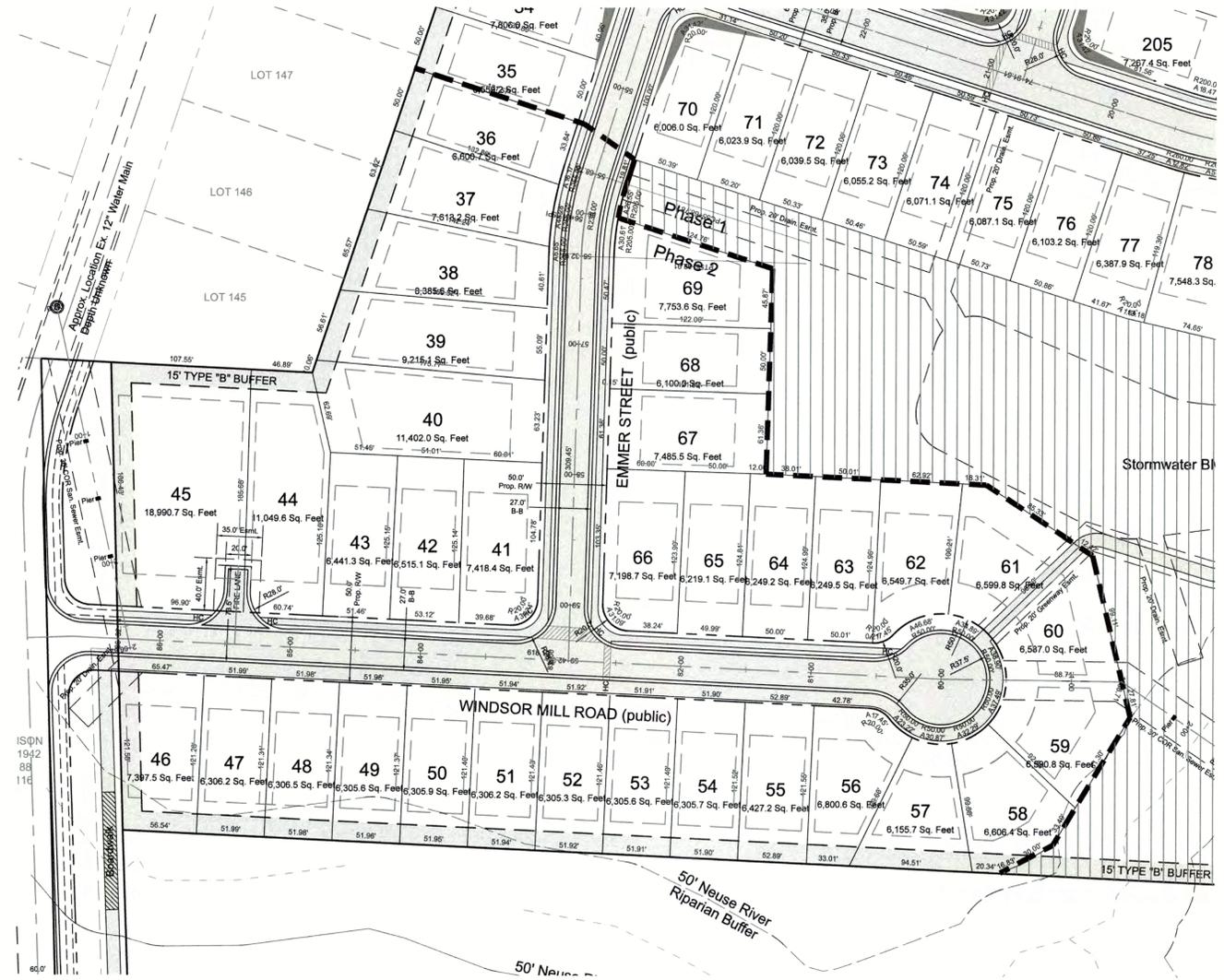
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Raleigh Water Review Officer

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NO	DATE	REVISION DESCRIPTION	BY
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2	10/23/2020	Revised per 1st review comments	MAC
3	11/25/2020	Town, Raleigh Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/12/2021	Issued for signature approval	MAC
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Digitally signed by Michael Crowley
Date: 2021.02.12 10:34:05 -0500

Phase 2 Site Plan
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

Graphic Scale



Job No. JDF
Dwg No. C5



PHASING DATA

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8	Date	Comment	By

Digitally signed by Michael Crowley
 Date: 2021.02.11 11:03:45 -05'00'
 Michael Crowley

Phase 3 Site Plan
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Graphic Scale



Job No. JDF
 Dwg No. **C6**

SITE PERMITTING APPROVAL

Water and Sewer Permits (If applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **S-4800**

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **W-3767**

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit #

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval
Raleigh Water Review Officer

ATTENTION CONTRACTORS

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Failure to notify both City Departments in advance of beginning construction, will result in the issuance of monetary fines, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for Inspection, Install a Downstream Plug, have Permitted Plans on the Jobsite, or any other Violation of City of Raleigh Standards will result in a Fine and Possible Exclusion from future work in the City of Raleigh.

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IMPORTANT NOTE REGARDING MH AND CB TOP ELEVATIONS:

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SEPARATION NOTES:

- 1. MINIMUM SEPARATION BETWEEN STORM DRAINAGE AND SANITARY SEWER IS 24 INCHES.
- 2. MINIMUM SEPARATION BETWEEN WATER AND STORM DRAINAGE IS 18 INCHES.
- 3. MINIMUM SEPARATION BETWEEN WATER AND SANITARY SEWER IS 18 INCHES.

HYDRANT, METER, AND CLEAN-OUT NOTES:

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Install 12" x 12" TS & V. Install 12" watermain Under Jones Dairy Road by Bore and Jack. 24" casing, 0.188 wall thickness.

Each Lot to Have Water and Sewer Service See Details

STANDARD UTILITY NOTES

- 1. All materials & construction methods shall be in accordance with City of Raleigh design standards, details & specifications (reference: CORPUD Handbook, current edition)
- 2. Utility separation requirements:
 - a) A distance of 100' shall be maintained between sanitary sewer & any private or public water supply source such as an impounded reservoir used as a source of drinking water. If adequate lateral separation cannot be achieved, ferrous sanitary sewer pipe shall be specified & installed to watertight specifications. However, the minimum separation shall not be less than 25' from a private well or 50' from a public well
 - b) When installing water &/or sewer mains, the horizontal separation between utilities shall be 10'. If this separation cannot be maintained due to existing conditions, the variation allowed is the water main in a separate trench with the elevation of the water main at least 18" above the top of the sewer & must be approved by the Public Utilities Director. All distances are measured from outside diameter to outside diameter
 - c) Where it is impossible to obtain proper separation, or anytime a sanitary sewer passes over a watermain, DIP materials or steel encasement extended 10' on each side of crossing must be specified & installed to watertight specifications
 - d) 5.0' minimum horizontal separation is required between all sanitary sewer & storm sewer facilities, unless DIP material is specified for sanitary sewer
 - e) Maintain 18" min vertical separation at all watermain & RCP storm drain crossings; maintain 24" min. vertical separation at all sanitary sewer & RCP storm drain crossings. Where adequate separations cannot be achieved, specify DIP materials & a concrete cradle having 6" min. clearance (per CORPUD details W-41 & S-49)
 - f) All other underground utilities shall cross water & sewer facilities with 18" min. vertical separation required
- 3. Any necessary field revisions are subject to review & approval of an amended plan &/or profile by the City of Raleigh Public Utilities Department prior to construction
- 4. Contractor shall maintain continuous water & sewer service to existing residences & businesses throughout construction of project. Any necessary service interruptions shall be preceded by a 24 hour advance notice to the City of Raleigh Public Utilities Department
- 5. 3.0' minimum cover is required on all water mains & sewer force mains. 4.0' minimum cover is required on all reuse mains
- 6. It is the developer's responsibility to abandon or remove existing water & sewer services not being used in redevelopment of a site unless otherwise directed by the City of Raleigh Public Utilities Department. This includes abandoning tap at main & removal of service from ROW or easement per CORPUD Handbook procedure
- 7. Install 3/4" copper water services with meters located at ROW or within a 2'x2' Waterline Easement immediately adjacent. NOTE: it is the applicant's responsibility to properly size the water service for each connection to provide adequate flow & pressure
- 8. Install 4" PVC sewer services @ 1.0% minimum grade with cleanouts located at ROW or easement line & spaced every 75 linear feet maximum
- 9. Pressure reducing valves are required on all water services exceeding 80 psi; backwater valves are required on all sanitary sewer services having building drains lower than 1.0' above the next upstream manhole
- 11. NCDOT / Railroad Encroachment Agreements are required for any utility work (including main extensions & service taps) within state or railroad ROW prior to construction
- 12. Grease Interceptor / Oil Water Separator sizing calculations & installation specifications shall be approved by the CORPUD FOG Program Coordinator prior to issuance of a Building Permit. Contact Tim Beasley at (919) 996-2334 or timothy.beasley@raleighnc.gov for more information
- 13. Cross-connection control protection devices are required based on degree of health hazard involved as listed in Appendix-B of the Rules Governing Public Water Systems in North Carolina. These guidelines are the minimum requirements. The devices shall meet American Society of Sanitary Engineering (ASSE) standards or be on the University of Southern California approval list. The devices shall be installed and tested (both initial and periodic testing thereafter) in accordance with the manufacturer's recommendations or the local cross-connection control program, whichever is more stringent. Contact Joanie Hartley at (919) 996-5923 or joanie.hartley@raleighnc.gov for more information



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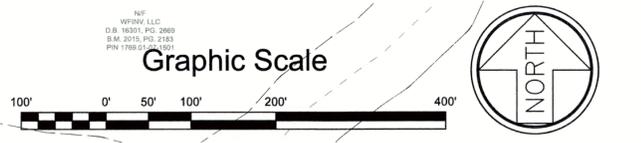
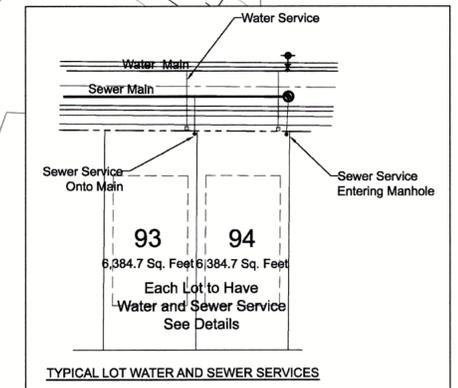
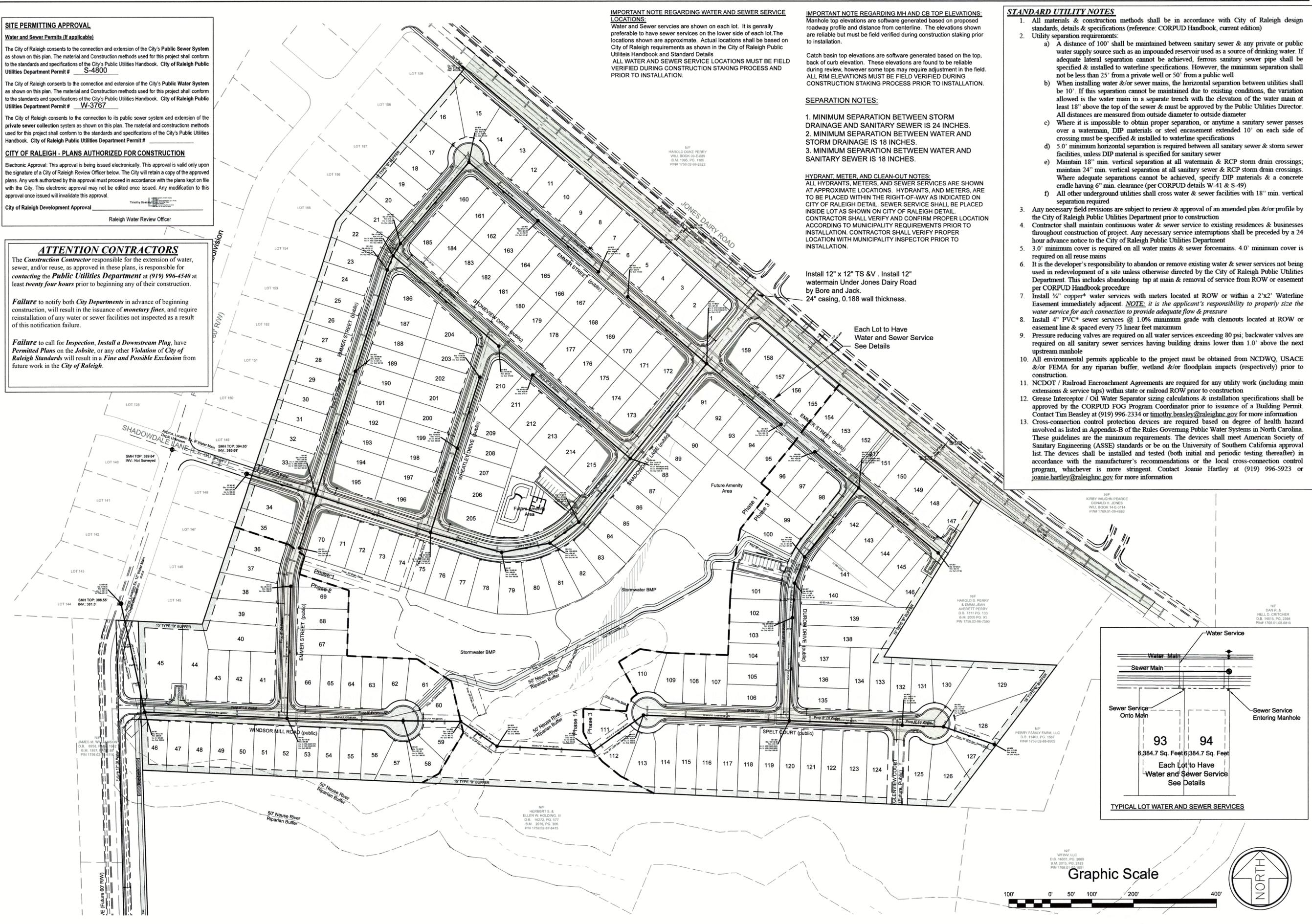
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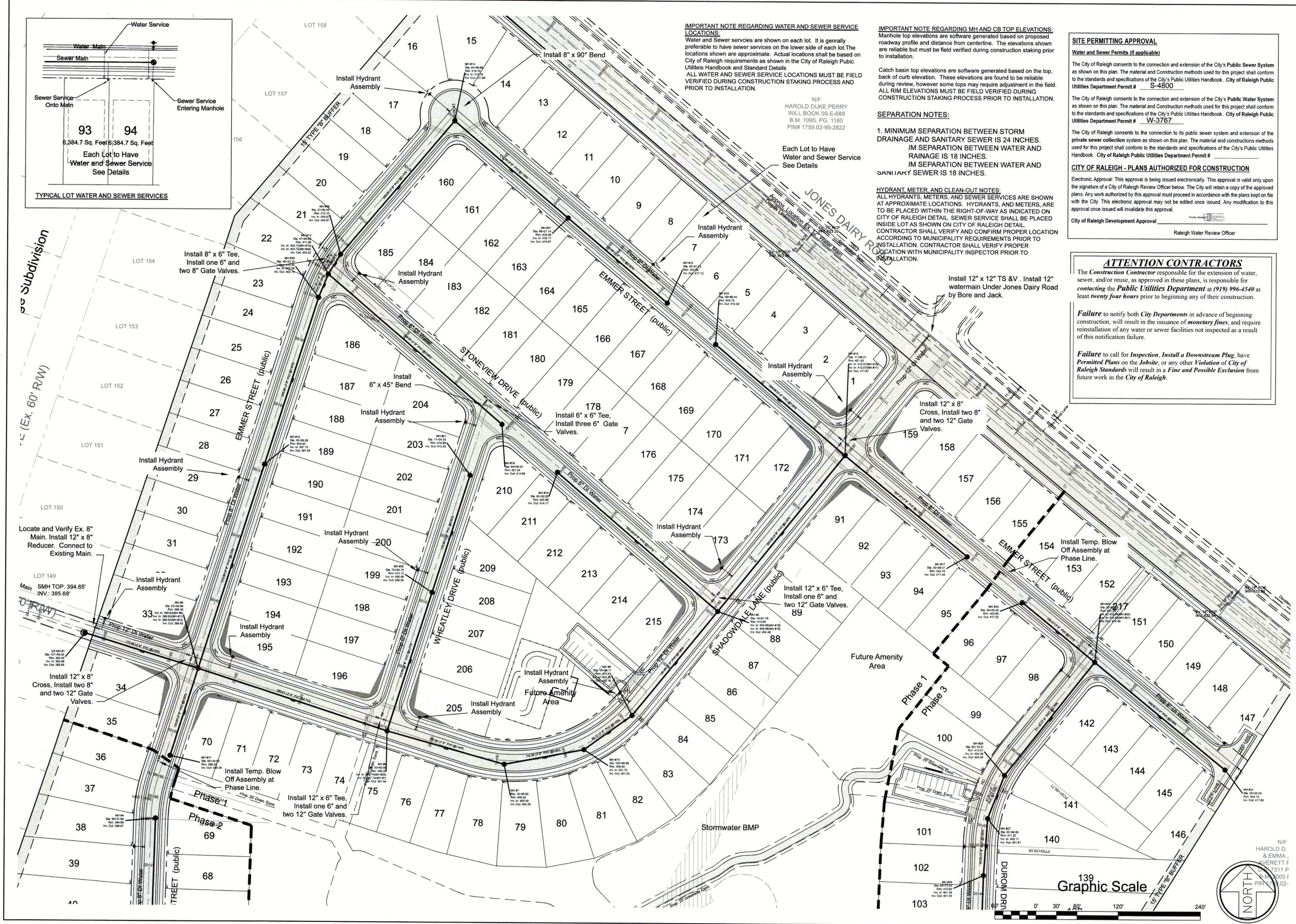
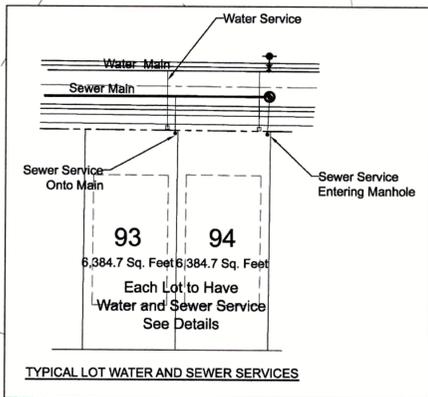
NO.	DATE	REVISION DESCRIPTION	BY
1	08/29/2020	Preliminary Construction Plans	MAC
2	10/23/2020	Review for final review comments	MAC
3	11/24/2020	Town Council Comments	MAC
4	01/11/2021	Town Council Comments	MAC
5	02/12/2021	Issued for signature approval	MAC
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By



Water and Sewer Utility Plan
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

Job No. JDF
Dwg No. C7





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N/F
HAROLD DUKE PERRY
WILL BOOK 09-E-689
B.M. 1995, PG. 1185
PIN# 1759.02-99-2822

SEPARATION NOTES:
1. MINIMUM SEPARATION BETWEEN STORM DRAINAGE AND SANITARY SEWER IS 24 INCHES.
JM SEPARATION BETWEEN WATER AND RAINAGE IS 18 INCHES.
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SITE PERMITTING APPROVAL
Water and Sewer Permits (if applicable)

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval _____
Raleigh Water Review Officer _____

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NO.	DATE	REVISION DESCRIPTION	BY
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2	10/23/2020	Revised per list review comments	MAC
3	11/26/2020	Town, Raleigh Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/12/2021	Based for signature approval	MAC
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Digitally signed by Michael Crowley
Date: 2021.02.12 10:38:26 -0500

Phase 1 Utility Plan
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

Job No. JDF
Dwg No. C8



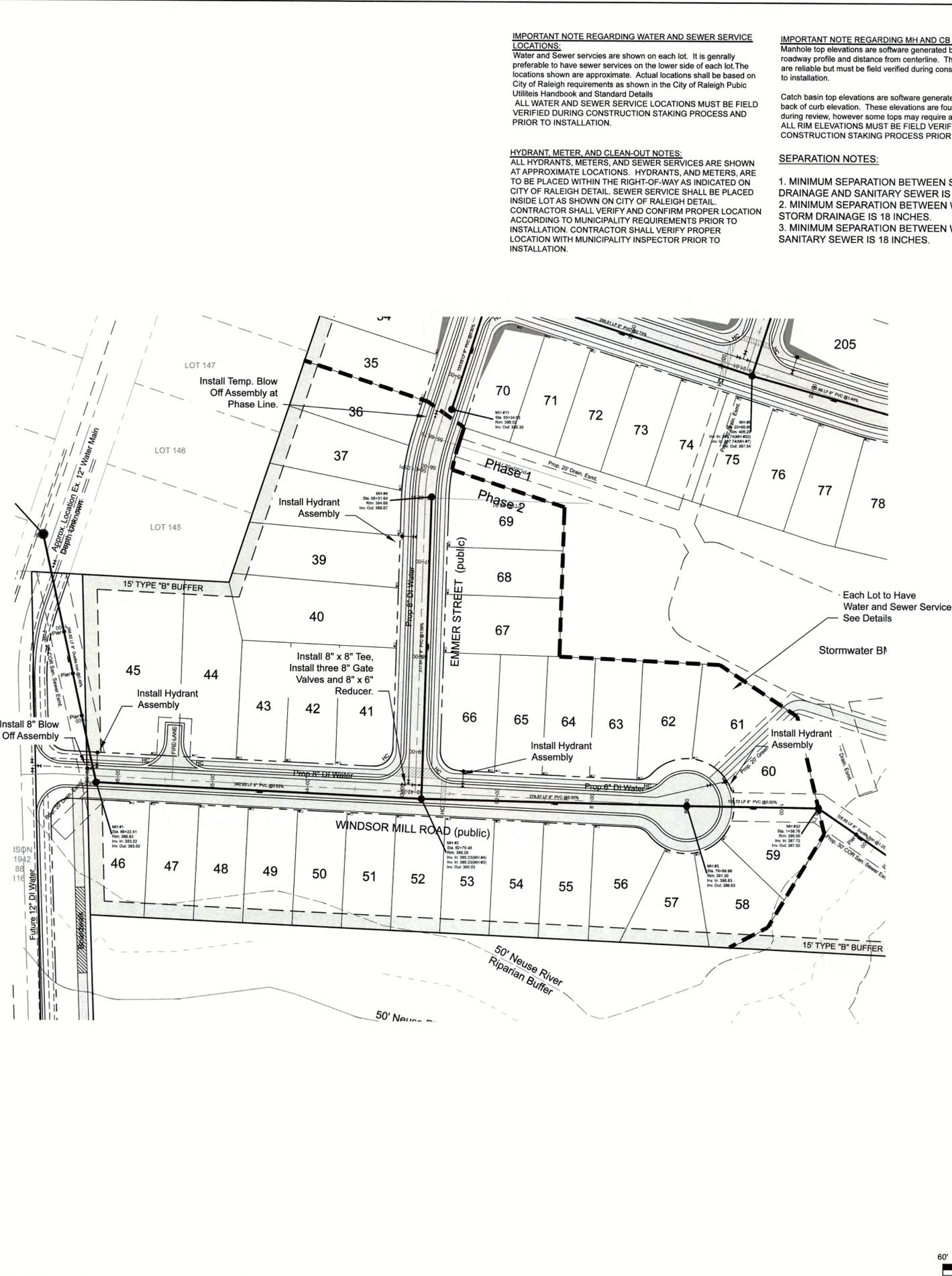
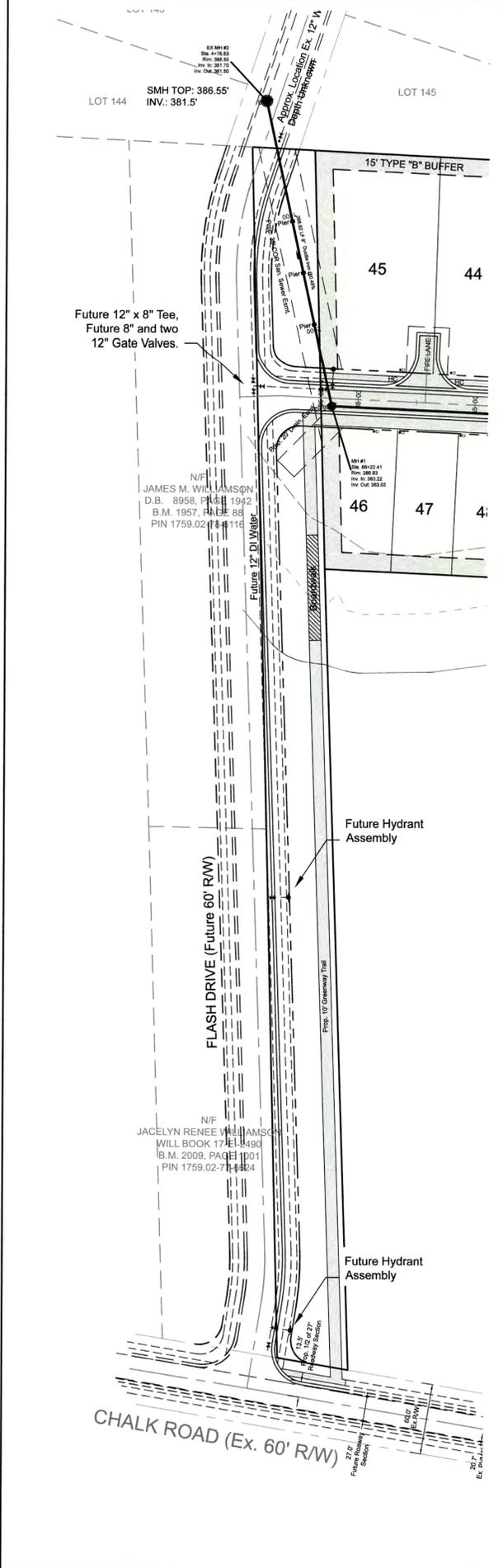
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N/F
HAROLD D. & EMMA AVERETT F
7311 P
B.M. 2005 F
PIN# 1759.02-99-2822



139
Graphic Scale





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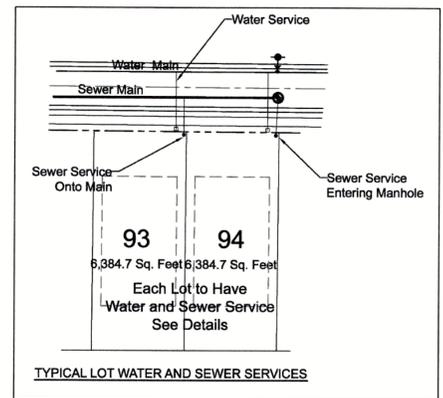
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SITE PERMITTING APPROVAL
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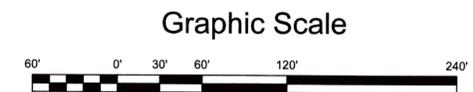


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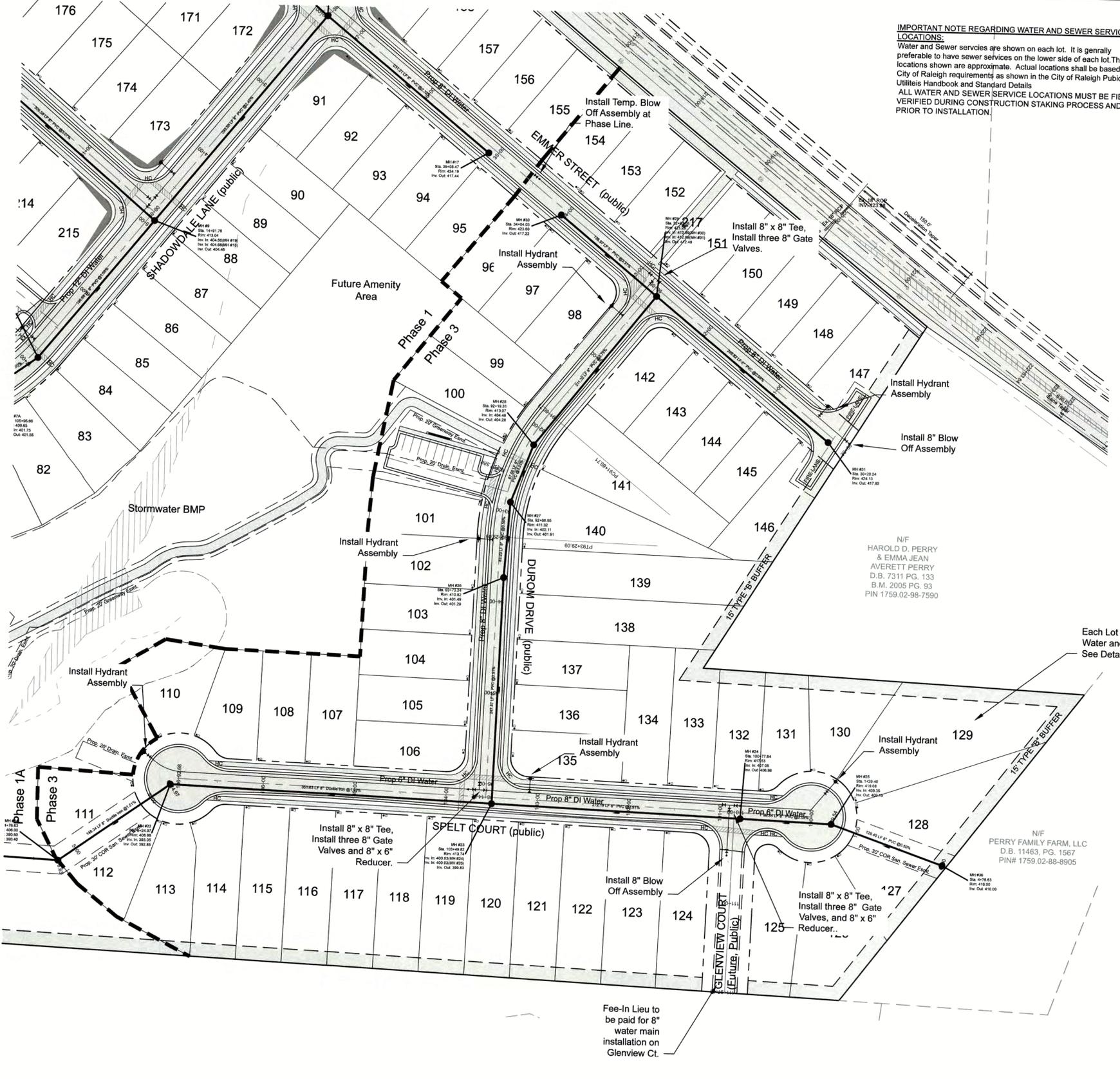
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6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By



Phase 2 Utility Plan
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina



Job No. JDF
 Dwg No. **C9**



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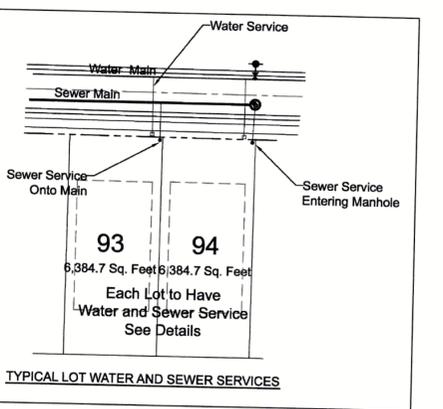
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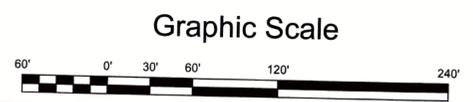


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Phase 3 Utility Plan
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina



Job No. JDF
 Dwg No. **C10**

SITE PERMITTING APPROVAL

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ALL HYDRANTS, METERS, AND SEWER SERVICES ARE SHOWN AT APPROXIMATE LOCATIONS. HYDRANTS, METERS, AND SEWER SERVICES ARE TO BE PLACED WITHIN THE RIGHT-OF-WAY OR AS INDICATED ON MUNICIPALITY DETAIL. CONTRACTOR SHALL VERIFY AND CONFIRM PROPER LOCATION ACCORDING TO MUNICIPALITY REQUIREMENTS PRIOR TO INSTALLATION. CONTRACTOR SHALL VERIFY PROPER LOCATION WITH MUNICIPALITY INSPECTOR PRIOR TO INSTALLATION.



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 Mcintyre, Gertie, Crowley
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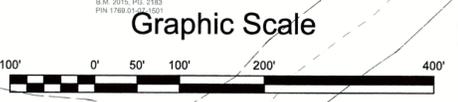


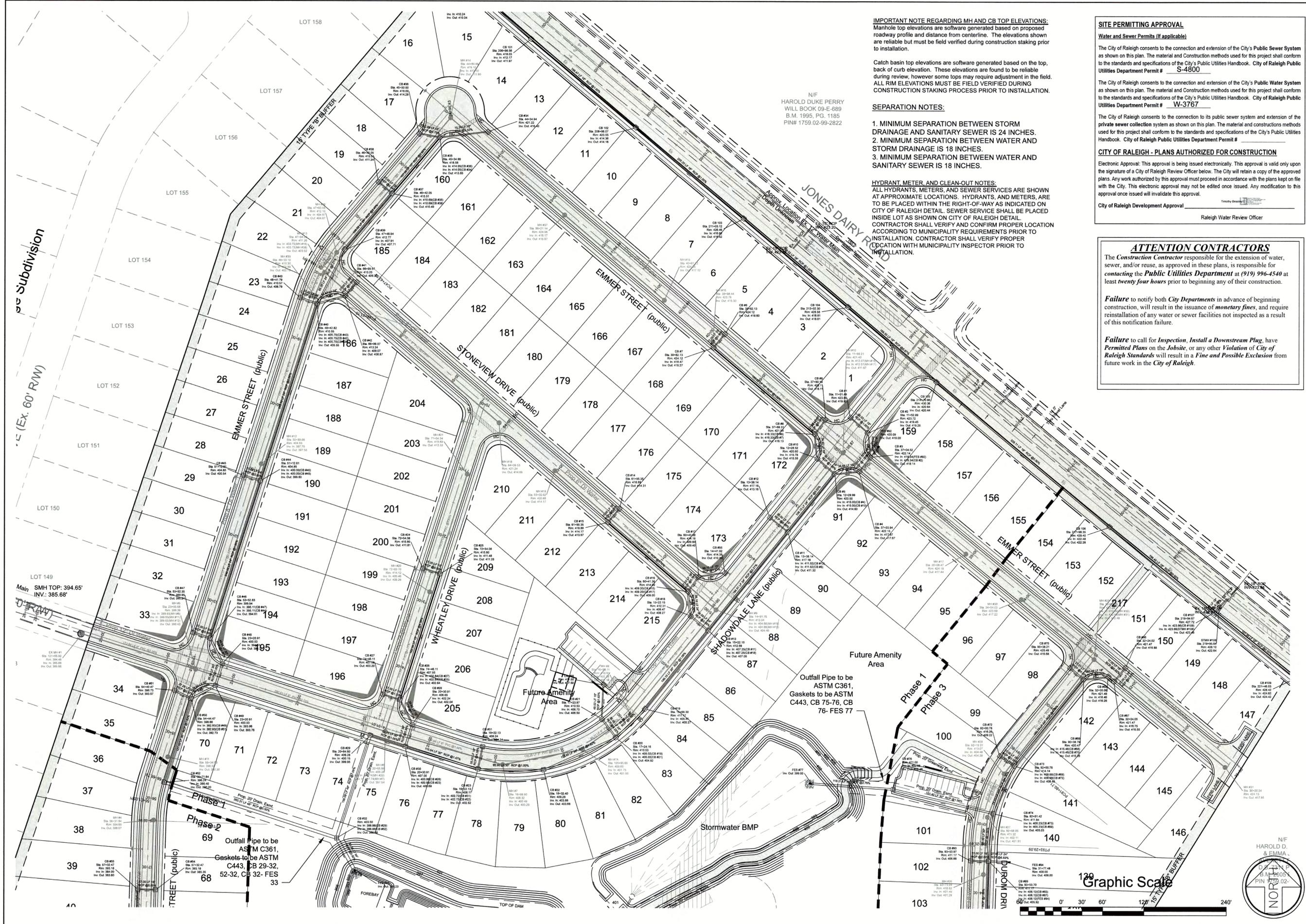
NO.	DATE	REVISION DESCRIPTION	BY
1	08/08/2020	Preliminary Construction Plans	MAC
2	10/28/2020	Revised per 1st review comments	MAC
3	11/28/2020	Town, Raleigh Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/12/2021	Issued for signature approval	MAC
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By



Storm Drainage Utility Plan
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. **C11**





IMPORTANT NOTE REGARDING MH AND CB TOP ELEVATIONS:
 Manhole top elevations are software generated based on proposed roadway profile and distance from centerline. The elevations shown are reliable but must be field verified during construction staking prior to installation.

Catch basin top elevations are software generated based on the top, back of curb elevation. These elevations are found to be reliable during review, however some tops may require adjustment in the field. **ALL RIM ELEVATIONS MUST BE FIELD VERIFIED DURING CONSTRUCTION STAKING PROCESS PRIOR TO INSTALLATION.**

SEPARATION NOTES:

1. MINIMUM SEPARATION BETWEEN STORM DRAINAGE AND SANITARY SEWER IS 24 INCHES.
2. MINIMUM SEPARATION BETWEEN WATER AND STORM DRAINAGE IS 18 INCHES.
3. MINIMUM SEPARATION BETWEEN WATER AND SANITARY SEWER IS 18 INCHES.

HYDRANT, METER, AND CLEAN-OUT NOTES:
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SITE PERMITTING APPROVAL
 Water and Sewer Permits (if applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **S-4800**

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **W-3767**

The City of Raleigh consents to the connection to its public sewer system and extensions of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit #

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
 Raleigh Water Review Officer

ATTENTION CONTRACTORS

The Construction Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the **Public Utilities Department at (919) 996-4540** at least **twenty four hours** prior to beginning any of their construction.

Failure to notify both City Departments in advance of beginning construction, will result in the issuance of **monetary fines**, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for inspection, install a Downstream Plug, have Permitted Plans on the Jobsite, or any other Violation of City of Raleigh Standards will result in a **Fine and Possible Exclusion** from future work in the City of Raleigh.



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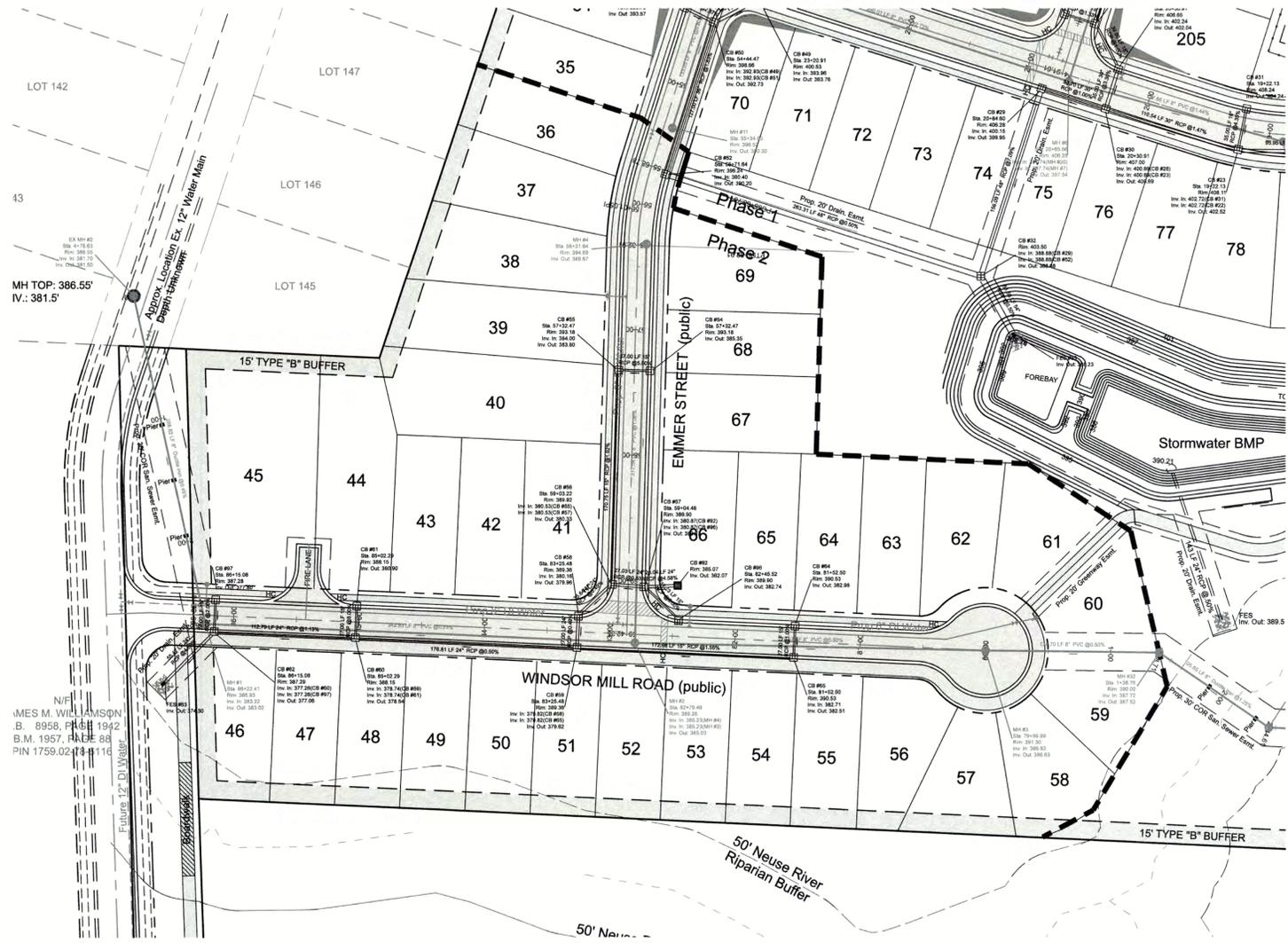
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NO	DATE	BY	REVISION DESCRIPTION
1	05/09/2020	MAC	Preliminary Construction Plans
2	10/22/2020	MAC	Revised per 1st review comments
3	11/25/2020	MAC	Town, Raleigh Comments
4	01/11/2021	MAC	Town Comments
5	02/12/2021	By	Issued for signature approval
6	Date	By	Comment
7	Date	By	Comment
8	Date	By	Comment

Digitally signed by Michael Crowley
 Date: 2021.05.07 10:21:05 -0400

Phase 1 Storm Drainage
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. **C12**



IMPORTANT NOTE REGARDING MH AND CB TOP ELEVATIONS:
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SEPARATION NOTES:

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2. MINIMUM SEPARATION BETWEEN WATER AND STORM DRAINAGE IS 18 INCHES.
3. MINIMUM SEPARATION BETWEEN WATER AND SANITARY SEWER IS 18 INCHES.

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SITE PERMITTING APPROVAL
 Water and Sewer Permits (If applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **S-4800**

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **W-3767**

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # _____

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City of Raleigh Development Approval _____
 Raleigh Water Review Officer

ATTENTION CONTRACTORS

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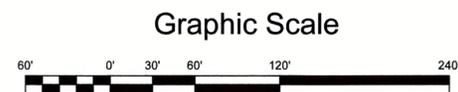
Failure to call for **Inspection, Install a Downstream Plug**, have **Permitted Plans** on the **Jobsite**, or any other **Violation of City of Raleigh Standards** will result in a **Fine and Possible Exclusion** from future work in the **City of Raleigh**.

N/A
 JAMES M. WILLIAMSON
 B. 8958, P. 1942
 B.M. 1957, P. 88
 PIN 1759.0213-1116



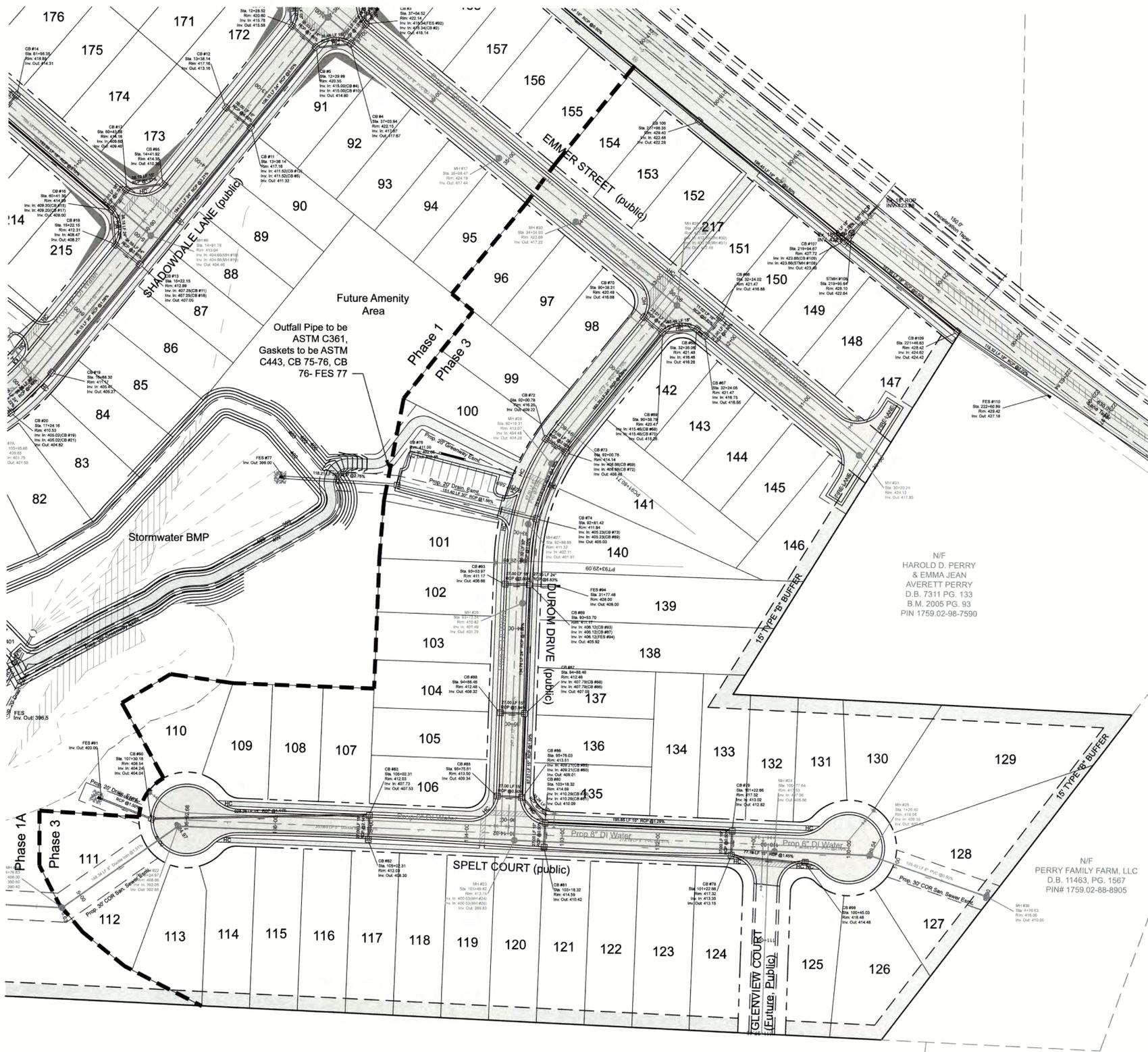
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2	10/23/2020	Revised per 1st review comments	MAC
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4	01/11/2021	Town Comments	MAC
5	02/22/2021	Issued for signature approval	By
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By



Phase 2 Storm Drainage
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. **C13**



IMPORTANT NOTE REGARDING MH AND CB TOP ELEVATIONS:
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SITE PERMITTING APPROVAL
 Water and Sewer Permits (If applicable)

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The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # _____

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval _____
 Raleigh Water Review Officer

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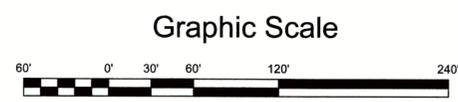


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1	05/08/2020	MAC	Preliminary Construction Plans
2	10/20/2020	MAC	Revised per 1st review comments
3	11/25/2020	MAC	Town, Raleigh Comments
4	01/11/2021	MAC	Town Comments
5	02/12/2021	By	Issued for signature approval
6	Date	By	Comment
7	Date	By	Comment
8	Date	By	Comment



Phase 3 Storm Drainage
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina



Job No. JDF
 Dwg No. **C14**



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NO.	DATE	REVISION DESCRIPTION	BY
1	10/08/2020	Preliminary Construction Plans	MAC
2	10/02/2020	Reviewed per 1st review comments	MAC
3	11/02/2020	Town Raleigh Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/12/2021	Issued for signature approval	By
6		Date Comment	By
7		Date Comment	By
8		Date Comment	By

Michael Crowley
Professional Engineer
1049-23-08-00
Date: 2021.02.12

Initial Erosion Control Plan
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

Job No. JDF
Dwg No. **C15**

LINE AND SYMBOL LEGEND

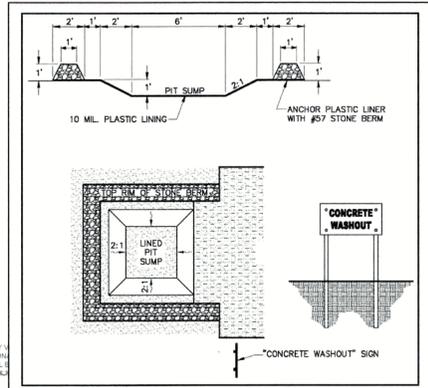
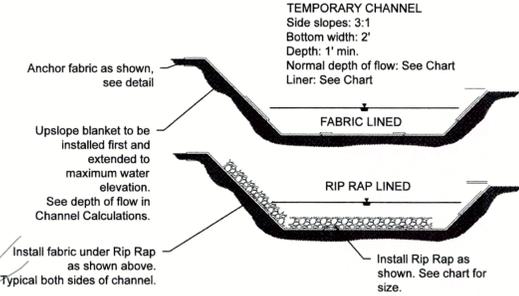
SFO SILT FENCE OUTLET
FES OUTLET DISSIPATOR
IP INLET PROTECTION
RC ROCK CHECK DAM
CL CLEARING LIMITS
SF SILT FENCE
TDD TEMPORARY DIVERSION
PF PERIMETER FENCE
SB SILT BAG
CW CONCRETE WASH PIT

BASIN PLAN

INSTALL BAFFLES PER STANDARD DETAIL
 INSTALL BAFFLES AT ALL BASINS PER STANDARD DETAILS
 SILT FENCE OUTLET SHALL BE PROVIDED DOWNSTREAM OF SKIMMER OUTLETS. AREA SHALL BE SEEDED AND JUTE MESH INSTALLED ON BASIN SLOPES UPON INSTALLATION.

BASIN SECTION

SEE CHART FOR ELEVATIONS AND DIMENSIONS



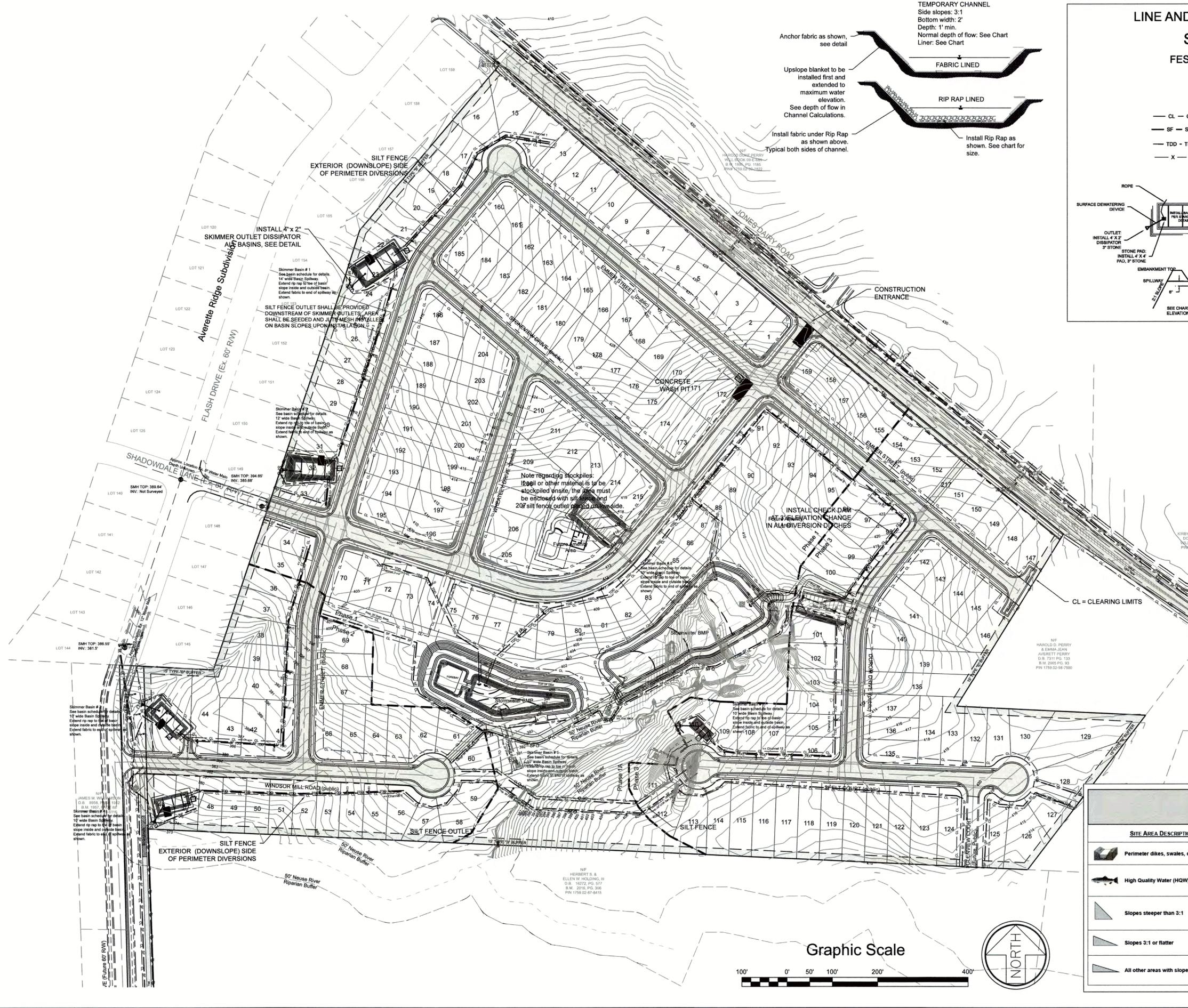
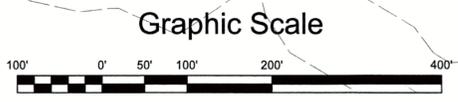
- NOTES:**
- INSTALL CONCRETE WASHOUT PIT AT LOCATION(S) SHOWN ON PLANS.
 - LINE PIT WITH IMPERVIOUS FABRIC OR POLYETHYLENE SHEET. ANCHOR FABRIC INTO GROUND OUTSIDE PIT AS SHOWN.
 - MAXIMUM WATER AND SEDIMENT DEPTH IS 12". PIT MUST BE EXCAVATED AND RE-LINED WHEN DEPTH OF SEDIMENT REACHES 12" OR COMBINED WATER/SEDIMENT DEPTH EXCEEDS 12" FOLLOWING WASHOUT OF CONCRETE TRUCK.
 - ALLOW WATER TO EVAPORATE COMPLETELY PRIOR TO EXCAVATING PIT.
 - WASHOUT PIT MAY BE LOCATED NO CLOSER THAN 50' TO DRAINS, INLETS, OR SURFACE WATERS.

CONCRETE WASHOUT PIT
NO SCALE

STABILIZATION TIMEFRAMES

(Effective Aug. 3, 2011)

SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.





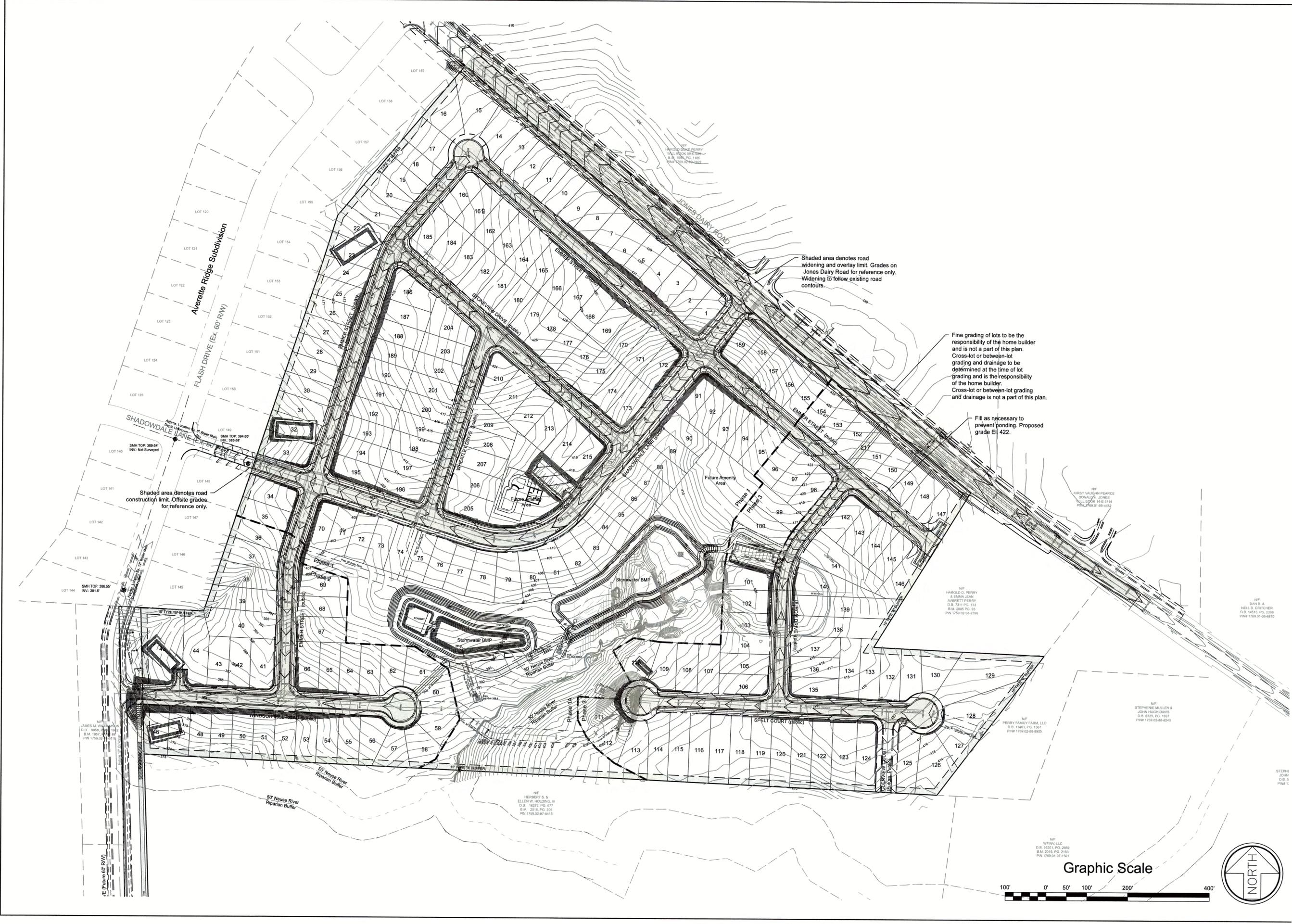
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NO.	DATE	REVISION DESCRIPTION	BY
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3	11/25/2020	Town, Raleigh Comments	MAC
4	01/11/2021	Issued for signature approval	MAC
5	02/12/2021	Comment	By
6		Comment	By
7		Comment	By
8		Comment	By

Digitally signed
 by Michael
 Crowley
 Date: 2021.02.12
 11:55:40 -05'00'

Grading Plan
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. **C16**



NOT TO SCALE
 JAMES M. WILSON
 D.B. 8958, P.O. 1182
 B.M. 1587, PG. 87
 P.N. 1759.02-15116

NOT TO SCALE
 SMH TOP: 389.64'
 INV. Not Surveyed

NOT TO SCALE
 SMH TOP: 386.55'
 INV. 381.9'

NOT TO SCALE
 SMH TOP: 384.85'
 INV. 385.68'

NOT TO SCALE
 HERBERT S. &
 ELLEN W. HOLDING, III
 D.B. 16272, PG. 877
 B.M. 2016, PG. 309
 P.N. 1759.02-87-8415

NOT TO SCALE
 HAROLD D. PERRY
 & SONIA JEAN
 AVERETT PERRY
 D.B. 7214, PG. 123
 B.M. 2005, PG. 63
 P.N. 1759.02-05-7590

NOT TO SCALE
 KIRBY VALGREN PEARCE
 "DORIS" JONES
 NELL BUCK 14-E-3114
 P.N. 1759.01-49-4885

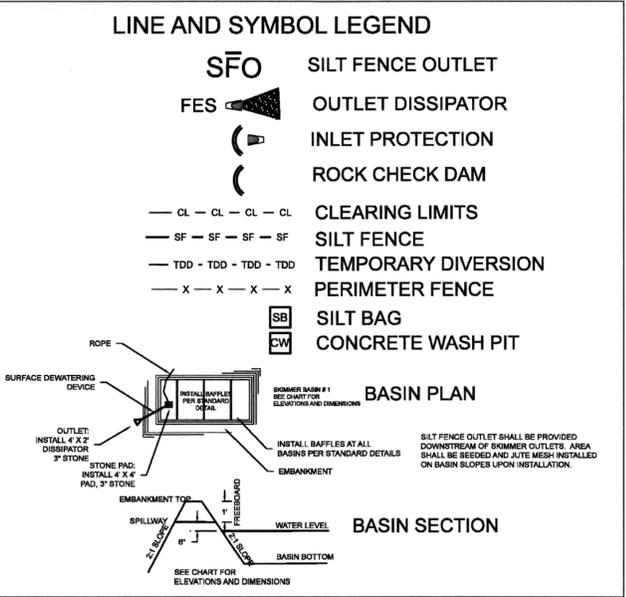
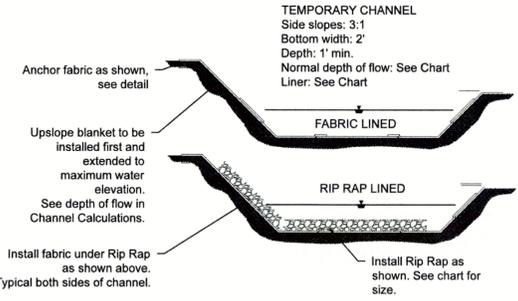
NOT TO SCALE
 DAN R. &
 NELL D. CRITCHER
 D.B. 14515, PG. 2288
 P.N. 1759.01-08-6810

NOT TO SCALE
 STEPHEN MULLEN &
 JOHN HUGH DAVIS
 D.B. 8229, PG. 1687
 P.N. 1759.02-85-8240

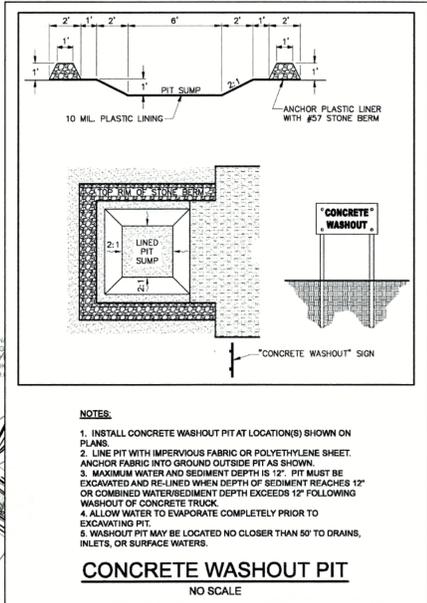
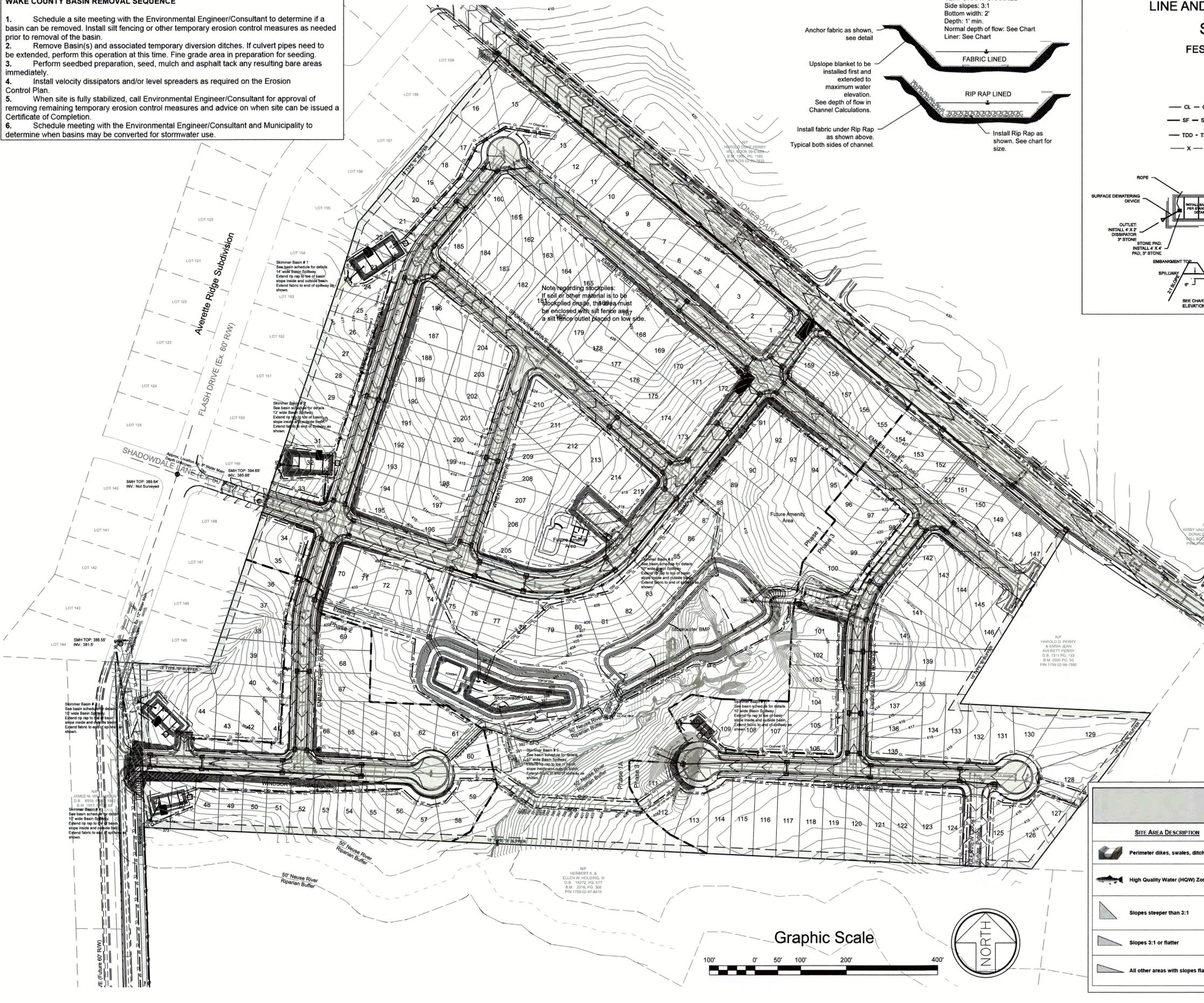
NOT TO SCALE
 WINK, LLC
 D.B. 16311, PG. 2669
 B.M. 2015, PG. 2183
 P.N. 1759.01-07-1501

NOT TO SCALE
 STEPHEN
 JOHN
 D.B. 8
 P.N. 1759.01-07-1501

- WAKE COUNTY BASIN REMOVAL SEQUENCE**
- Schedule a site meeting with the Environmental Engineer/Consultant to determine if a basin can be removed. Install silt fencing or other temporary erosion control measures as needed prior to removal of the basin.
 - Remove Basin(s) and associated temporary diversion ditches. If culvert pipes need to be extended, perform this operation at this time. Fine grade area in preparation for seeding.
 - Perform seedbed preparation, seed, mulch and asphalt tack any resulting bare areas immediately.
 - Install velocity dissipators and/or level spreaders as required on the Erosion Control Plan.
 - When site is fully stabilized, call Environmental Engineer/Consultant for approval of removing remaining temporary erosion control measures and advice on when site can be issued a Certificate of Completion.
 - Schedule meeting with the Environmental Engineer/Consultant and Municipality to determine when basins may be converted for stormwater use.

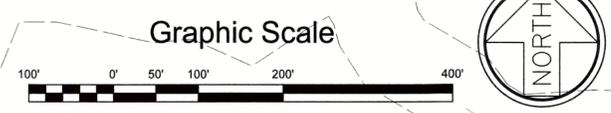


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STABILIZATION TIMEFRAMES
(Effective Aug. 3, 2011)

SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
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High Quality Water (HQW) Zones	7 days	None
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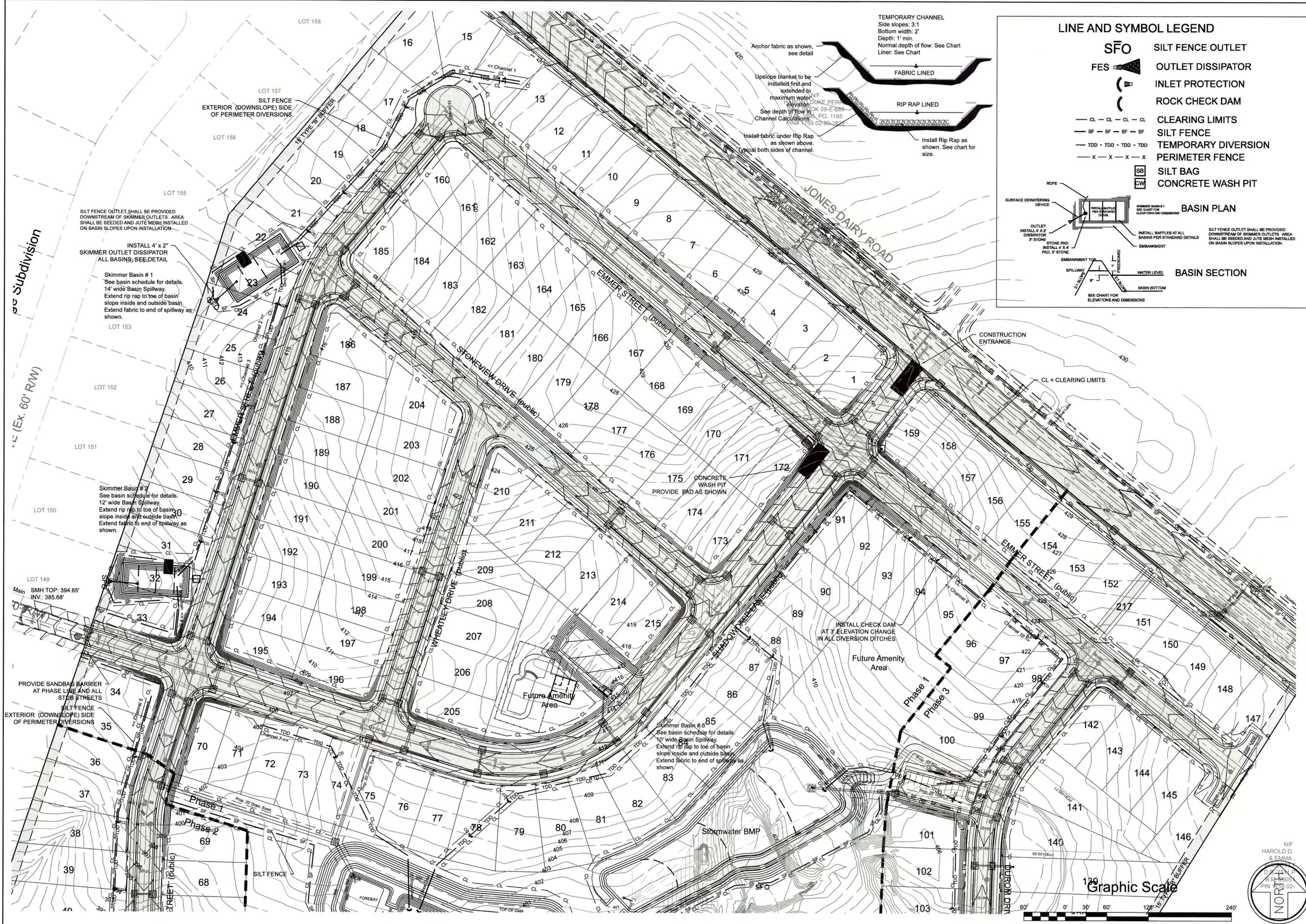


NO	DATE	REVISION DESCRIPTION	BY
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6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Michael J. Crowley
 Professional Engineer
 State of North Carolina
 License No. 27567
 Date: 2021.02.12
 10:52:00 AM '20

Erosion Control Plan
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. **C17**



LINE AND SYMBOL LEGEND

- SFO SILT FENCE OUTLET
- FES OUTLET DISSIPATOR
- INLET PROTECTION
- ROCK CHECK DAM
- CL - CL - CL - CL CLEARING LIMITS
- SF - SF - SF - SF SILT FENCE
- TDD - TDD - TDD - TDD TEMPORARY DIVERSION
- X - X - X - X PERIMETER FENCE
- SB SILT BAG
- CW CONCRETE WASH PIT

BASIN PLAN

INSTALL BAFFLES PER STANDARD DETAILS

INSTALL BAFFLES AT ALL BASINS PER STANDARD DETAILS

SILT FENCE OUTLET SHALL BE PROVIDED DOWNSTREAM OF SKIMMER OUTLETS. AREA SHALL BE SEEDED AND JUTE MESH INSTALLED ON BASIN SLOPES UPON INSTALLATION.

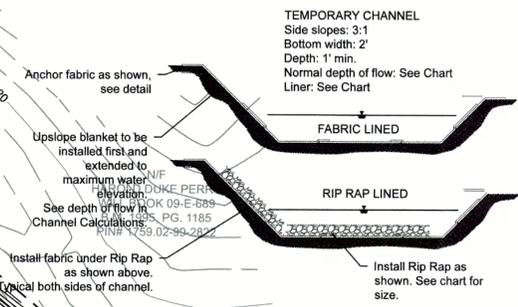
BASIN SECTION

EMMBANKMENT TOP

WATER LEVEL

BASIN BOTTOM

SEE CHART FOR ELEVATIONS AND DIMENSIONS



SILT FENCE OUTLET SHALL BE PROVIDED DOWNSTREAM OF SKIMMER OUTLETS. AREA SHALL BE SEEDED AND JUTE MESH INSTALLED ON BASIN SLOPES UPON INSTALLATION.

INSTALL 4' x 2" SKIMMER OUTLET DISSIPATOR ALL BASINS, SEE DETAIL

Skimmer Basin #1
See basin schedule for details.
14' wide Basin Spillway.
Extend rip rap to toe of basin slope inside and outside basin.
Extend fabric to end of spillway as shown.

Skimmer Basin #2
See basin schedule for details.
12' wide Basin Spillway.
Extend rip rap to toe of basin slope inside and outside basin.
Extend fabric to end of spillway as shown.

Skimmer Basin #6
See basin schedule for details.
10' wide Basin Spillway.
Extend rip rap to toe of basin slope inside and outside basin.
Extend fabric to end of spillway as shown.

PROVIDE SANDBAG BARRIER AT PHASE LINE AND ALL STUB STREETS

SILT FENCE EXTERIOR (DOWNSLOPE) SIDE OF PERIMETER DIVERSIONS

SMH TOP: 394.65'
INV: 385.68'

CONCRETE WASH PIT PROVIDE PAD AS SHOWN

INSTALL CHECK DAM AT 3' ELEVATION CHANGE IN ALL DIVERSION DITCHES

Graphic Scale



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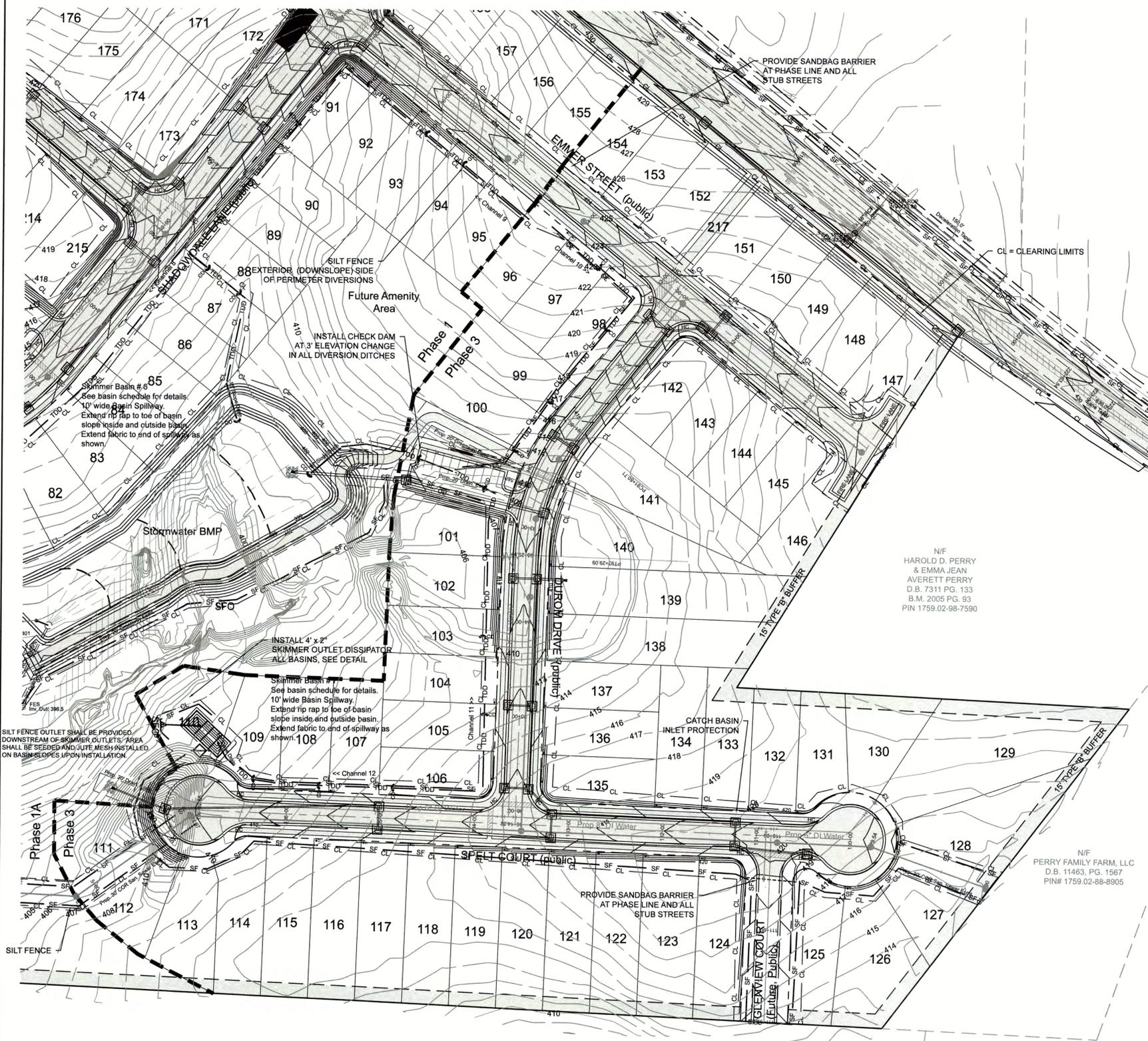
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5	02/12/2021	Issued for signature approval	By
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Michael Crowley
Digitally signed by Michael Crowley
Date: 2021.02.12 10:52:43 -0500
MICHAEL A. CROWLEY

Phase 1
Grading and Erosion Control
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

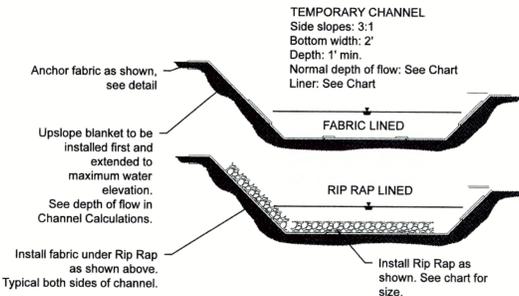
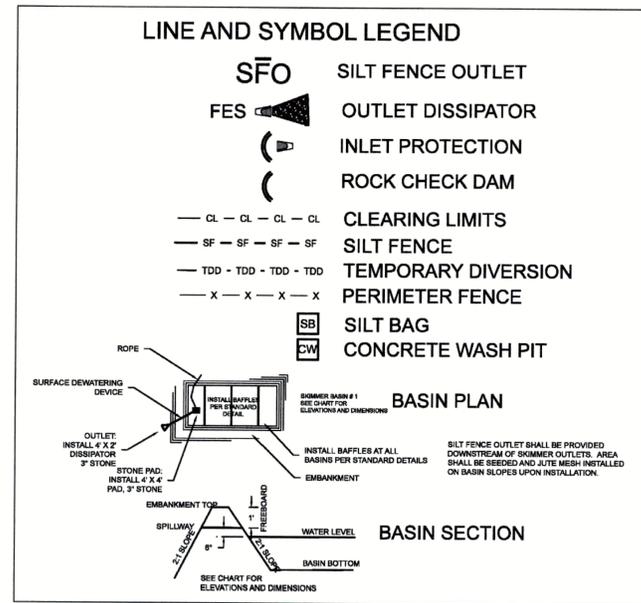
Job No. JDF
Dwg No. **C18**





N/F
 HAROLD D. PERRY
 & EMMA JEAN
 AVERETT PERRY
 D.B. 7311 PG. 133
 B.M. 2005 PG. 93
 PIN 1759.02-98-7590

N/F
 PERRY FAMILY FARM, LLC
 D.B. 11463, PG. 1567
 PIN# 1759.02-88-8905

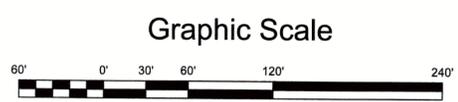


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7	07/28/2021	Comment	By
8	07/28/2021	Comment	By



Phase 3
Grading and Erosion Control
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina



Job No. JDF
 Dwg No. **C20**

Channel Design Calculations														
Channel	Drain Area, ac	Channel Length, ft	Channel Drop, ft	C	I, in/hr	Flow Q, cfs	Channel Slope, ft/ft	n	Side Slope:1	Bottom Width, ft	Depth of Flow, ft	Velocity fps	Shear Stress PSF	Allowable Shear Stress PSF
1	2.7	431	9	0.3	7.22	5.8	0.0209	0.020	3.00	2.0	0.40	4.61	0.52	2.3
2	1.35	136	3	0.3	7.22	2.9	0.0220	0.020	3.00	2.0	0.27	3.83	0.37	2.3
3	2.535	328	13	0.3	7.22	5.5	0.0396	0.020	3.00	2.0	0.32	5.68	0.80	2.3
4	0.845	136	6	0.3	7.22	1.8	0.0441	0.020	3.00	2.0	0.17	4.22	0.47	2.3
5	2.92	691	18	0.3	7.22	6.3	0.0260	0.020	3.00	2.0	0.39	14.57	0.64	2.3
6	2.26	493	11	0.3	7.22	4.9	0.0223	0.020	3.00	2.0	0.36	4.48	0.50	2.3
7	2.09	338	2	0.3	7.22	4.5	0.0059	0.020	3.00	2.0	0.48	2.72	0.18	2.3
8	4.18	597	9	0.3	7.22	9.1	0.0151	0.020	3.00	2.0	0.54	4.63	0.51	2.3
9	8.39	752	19	0.75	7.22	22.7	0.0261	0.020	3.00	2.0	0.74	7.24	1.21	5
10	4.195	499	13	0.75	7.22	22.7	0.0130	0.020	3.00	2.0	0.88	5.60	0.71	2.3
11	4.195	463	6	0.75	7.22	22.7	0.0130	0.020	3.00	2.0	0.88	5.60	0.71	2.3
12	0.98	300	11	0.75	7.22	5.3	0.0367	0.020	3.00	2.0	0.33	5.48	0.74	2.3

Plunge Pool Schedule						
Location	A	B	C	D	E	F
Wet Pond Outlet	7.6'	1.4'	9.1'	9.55'	1.6'	9.55'
Bioretention Outlet	7.6'	1.4'	6.7'	9.55'	1.6'	9.55'
FES # 63	13.25'	2.1'	9.85'	7.85'	2.5'	7.85'
FES #91	4.2'	1.0'	4.8'	10.35'	1.3'	10.35'

Impervious Summary - Jones Dairy Preserve South			
	Square Feet	Acres	
Overall Site	2,356,596.00	54.10	
Impervious Summary			
Lots (3600 SF)	216	756,000.00	17.36
Walking Trail		27,660.00	0.63
Roadway (27' width)		161,082.00	3.70
Roadway (35' width)		76,927.00	1.77
Sidewalk (both sides)		93,960.00	2.16
Total Impervious			25.61

Sediment Basin Design																										
TRAP: For drainage areas < 1 acre					SKIMMER: For drainage areas < 10 acres					RISER: For drainage areas > 10 acres																
Min. volume = 3,600 cf per acre disturbed					Min. volume = 1,800 cf per acre disturbed					Min. volume = 1,800 cf per acre disturbed																
Min. area = 435 sf per Q10 cfs					Min. area = 435 sf per Q10 cfs					Min. area = 435 sf per Q10 cfs																
Weir Equation: L=QCH ^{3/2}					Weir Equation: L=QCH ^{3/2}					Weir Equation: L=QCH ^{3/2}																
LW: 2:1					LW: 2:1 - 6:1					LW: 2:1																
Basin Number	Drainage Area (ac)	Disturbed Area (ac)	Runoff Coefficient	Rainfall Intensity (in/hr)	Flow Q ₁₀ (cfs)	Basin Type Req'd	Volume Req'd (cf)	Surface Area Req'd (sf)	Width at WL (ft)	Length at WL (ft)	L/W	Water Depth (2 ft min) (ft)	Basin Side Slope	Bottom Width (ft)	Bottom Length (ft)	Volume Provided (cf)	Surface Area Provided (sf)	Top of Embankment (ft)	Spillway Elevation (ft)	Water Level Elevation (ft)	Bottom Elevation (ft)	Basin Depth (ft)	Weir Length (ft)	Skimmer Drawdown (days)	Skimmer Size (in)	Orifice Diameter (in)
1	4.05	4.05	0.5	7.22	14.62	SKIMMER	7290	6360	57	114	2	2	X1	49	106	11692	6498	410	408.0	408.5	406.5	3.5	14	3	3	1.6
2	3.38	3.38	0.5	7.22	12.20	SKIMMER	6084	5308	52	104	2	2	2	44	96	9632	5408	400	399.0	398.5	396.5	3.5	12	3	3	1.5
3	2.92	2.92	0.5	7.22	10.54	SKIMMER	5296	4585	48	96	2	2	2	40	88	8128	4608	383	382.0	381.5	379.5	3.5	10	3	3	1.3
4	2.46	2.46	0.5	7.22	8.88	SKIMMER	4428	3863	44	88	2	2	2	36	80	6752	3872	377	376.0	375.5	373.5	3.5	10	3	3	1.2
7	1	1	0.5	7.22	3.61	SKIMMER	1800	1570	29	58	2	2	2	21	50	2732	1882	403	402.0	401.5	399.5	3.5	10	3	3	0.8

Sediment Basin Design																											
TRAP: For drainage areas < 1 acre					SKIMMER: For drainage areas < 10 acres					RISER: For drainage areas > 10 acres																	
Min. volume = 3,600 cf per acre disturbed					Min. volume = 1,800 cf per acre disturbed					Min. volume = 1,800 cf per acre disturbed																	
Min. area = 435 sf per Q10 cfs					Min. area = 325 sf per Q10 cfs					Min. area = 435 sf per Q10 cfs																	
Weir Equation: L=QCH ^{3/2}					Weir Equation: L=QCH ^{3/2}					Weir Equation: L=QCH ^{3/2}																	
LW: 2:1					LW: 2:1 - 6:1					LW: 2:1																	
Basin Number	Drainage Area (ac)	Disturbed Area (ac)	Runoff Coefficient	Rainfall Intensity (in/hr)	Flow Q ₁₀ (cfs)	Basin Type Req'd	Basin Shape	Volume Req'd (cf)	Surface Area Req'd (sf)	Width at WL (ft)	Length at WL (ft)	L/W	Water Depth (2 ft min) (ft)	Basin Side Slope	Bottom Width (ft)	Bottom Length (ft)	Volume Provided (cf)	Surface Area Provided (sf)	Top of Embankment (ft)	Spillway Elevation (ft)	Water Level Elevation (ft)	Bottom Elevation (ft)	Basin Depth (ft)	Weir Length (ft)	Skimmer Drawdown (days)	Skimmer Size (in)	Orifice Diameter (in)
5	6.37	1	0.5	7.22	23.00	SKIMMER	USER DEFINED	1800	7474	USER	USER	2	6	3	USER	USER	56541	12286	401	400.0	399.5	393.5	7.5	22	3	3	3.6
6	16.78	2	0.5	7.22	60.88	RISER	USER DEFINED	3600	26350	USER	USER	2	5	3	USER	USER	444220	34482	405	404.0	403.5	398.5	6.5	57	3	3	10.0



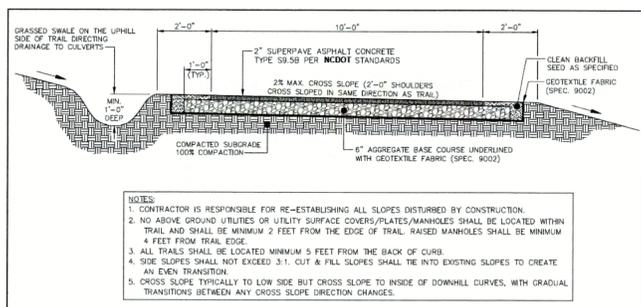
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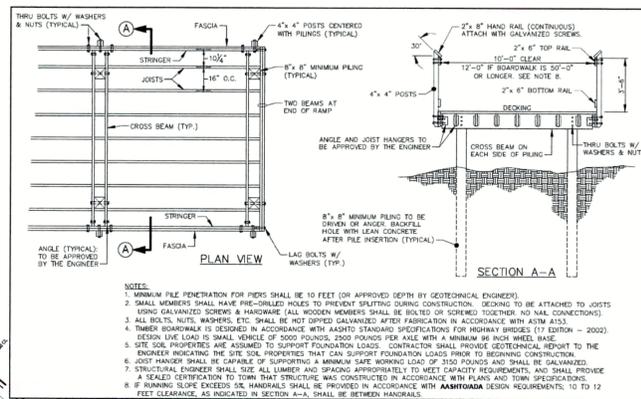
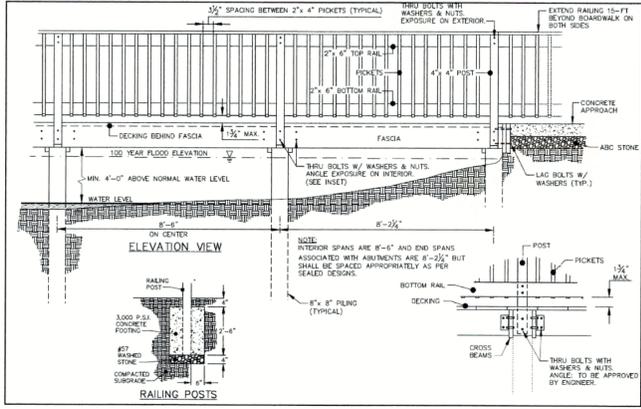
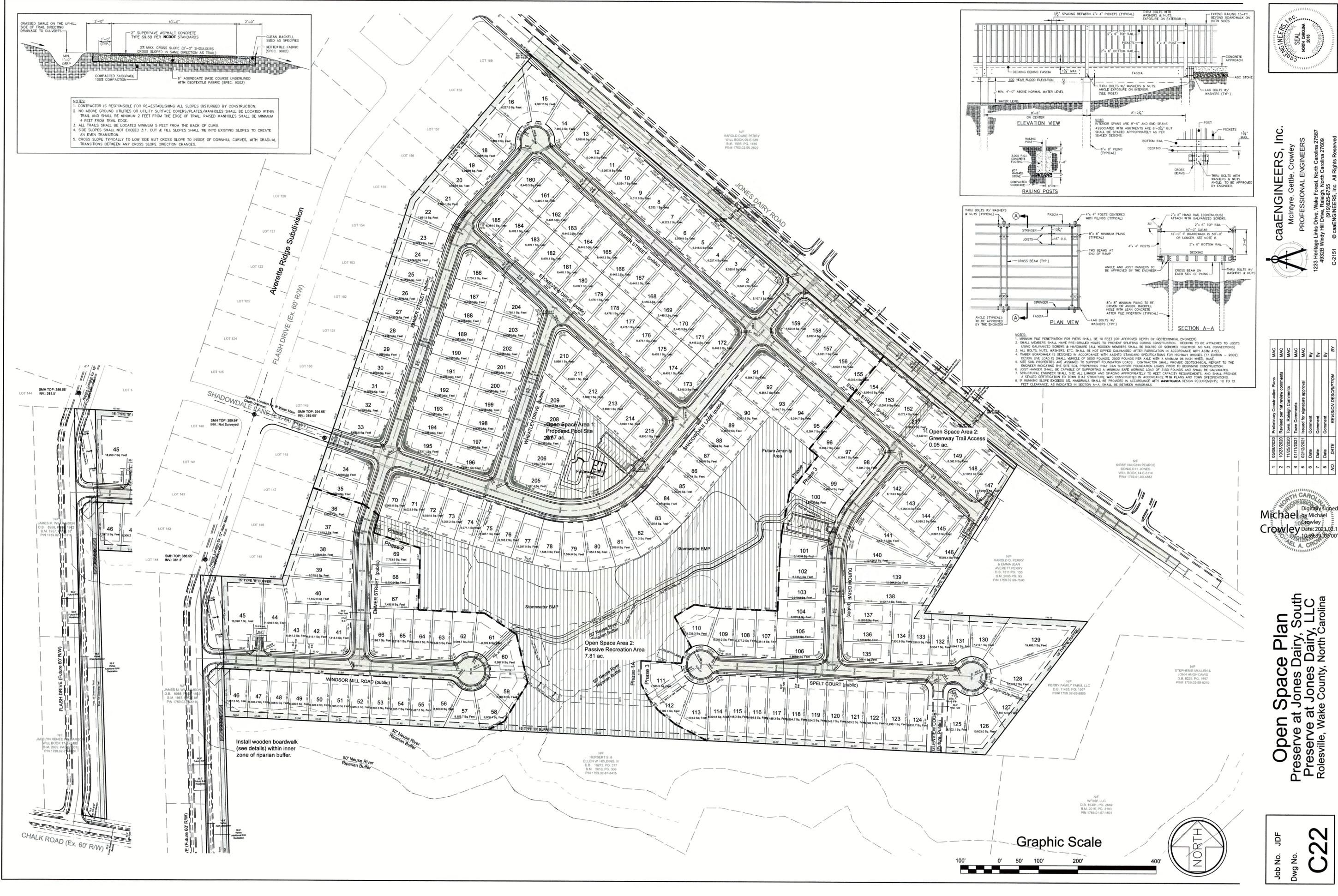
Michael Crowley
 Digitally signed by Michael Crowley
 Date: 2025.02.12 10:58:06 -0500
 MICHAEL A. CROWLEY

Erosion Control Notes
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. C21



- NOTES:**
- CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING ALL SLOPES DISTURBED BY CONSTRUCTION.
 - NO ABOVE GROUND UTILITIES OR UTILITY SURFACE COVERS/PLATES/MANHOLES SHALL BE LOCATED WITHIN TRAIL AND SHALL BE MINIMUM 2 FEET FROM THE EDGE OF TRAIL. RAISED MANHOLES SHALL BE MINIMUM 4 FEET FROM TRAIL EDGE.
 - ALL TRAILS SHALL BE LOCATED MINIMUM 5 FEET FROM THE BACK OF CURB.
 - SIDE SLOPES SHALL NOT EXCEED 3:1. CUT & FILL SLOPES SHALL TIE INTO EXISTING SLOPES TO CREATE AN EVEN TRANSITION.
 - CROSS SLOPE TYPICALLY TO LOW SIDE BUT CROSS SLOPE TO INSIDE OF DOWNHILL CURVES, WITH GRADUAL TRANSITIONS BETWEEN ANY CROSS SLOPE DIRECTION CHANGES.

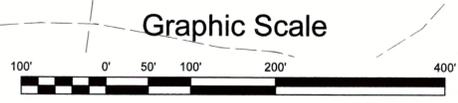


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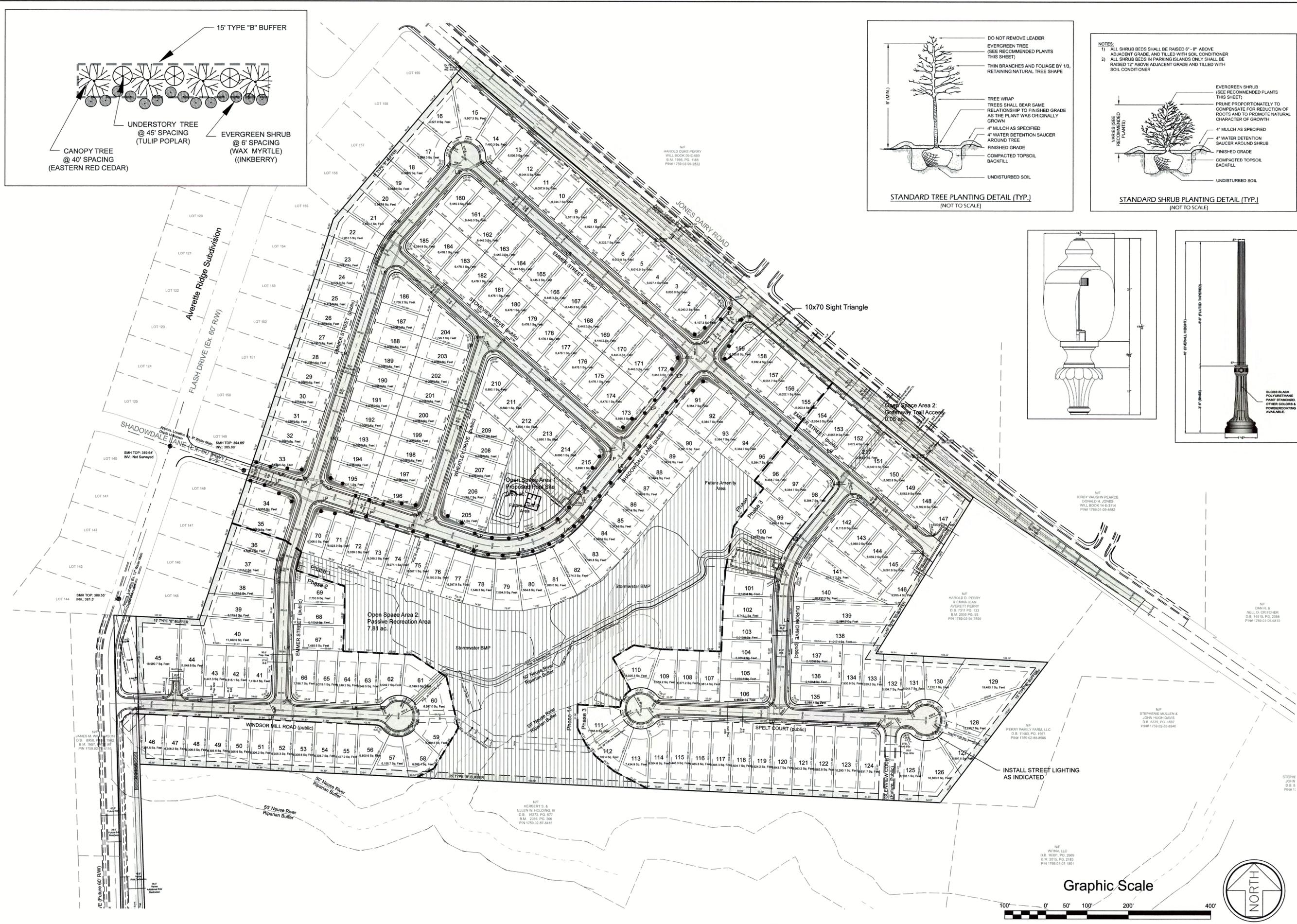
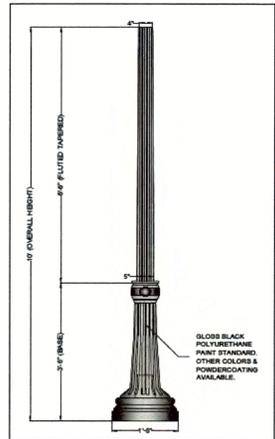
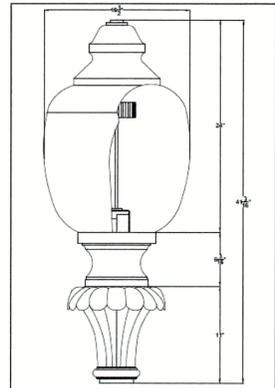
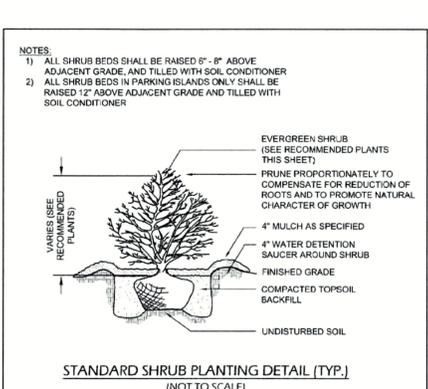
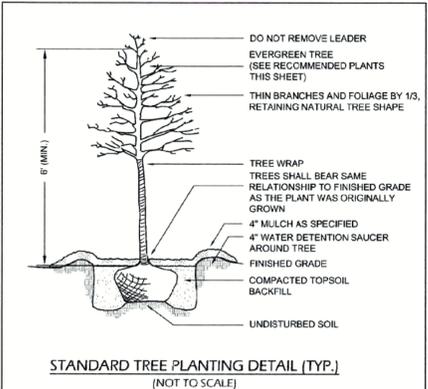
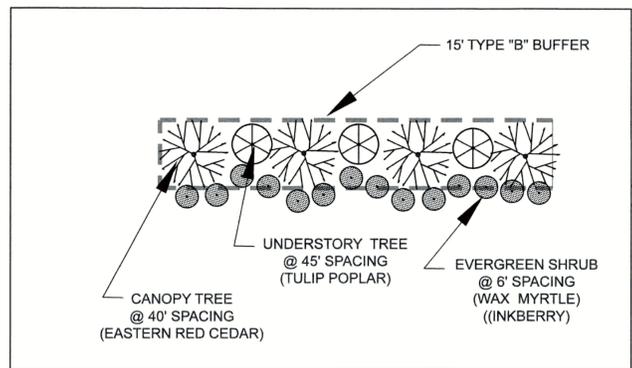
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Open Space Plan
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina



Job No. JDF
 Dwg No. **C22**



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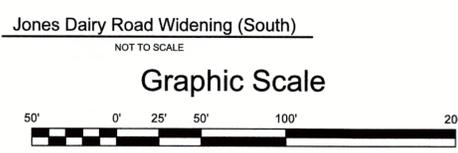
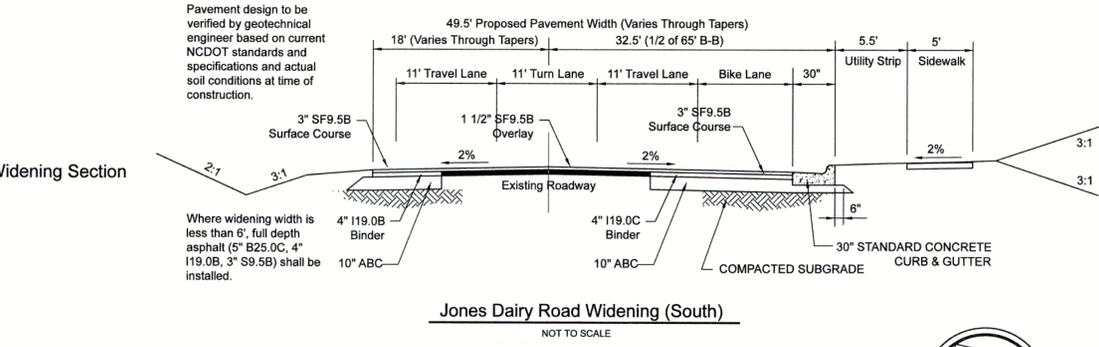
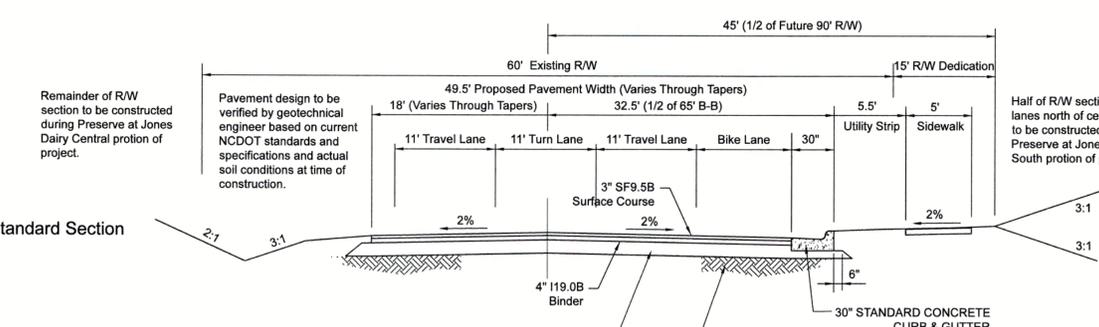
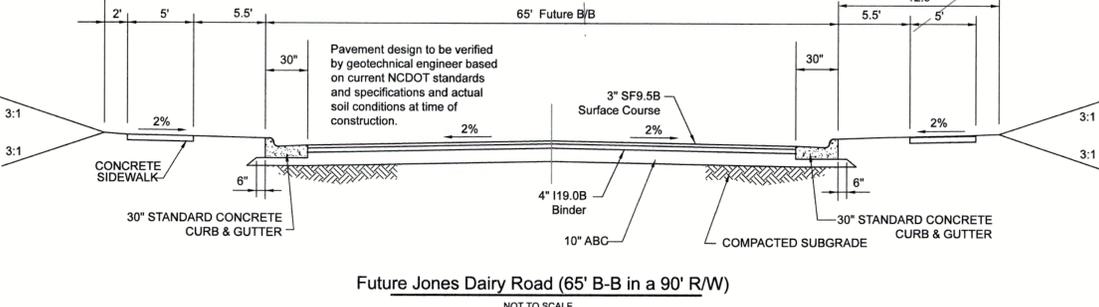
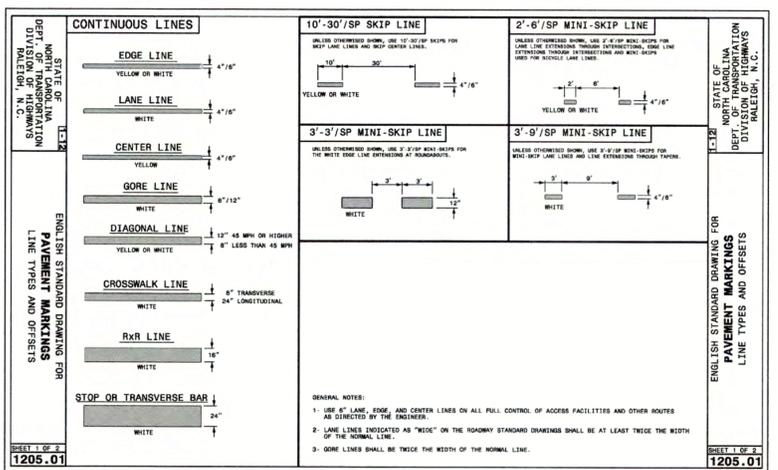
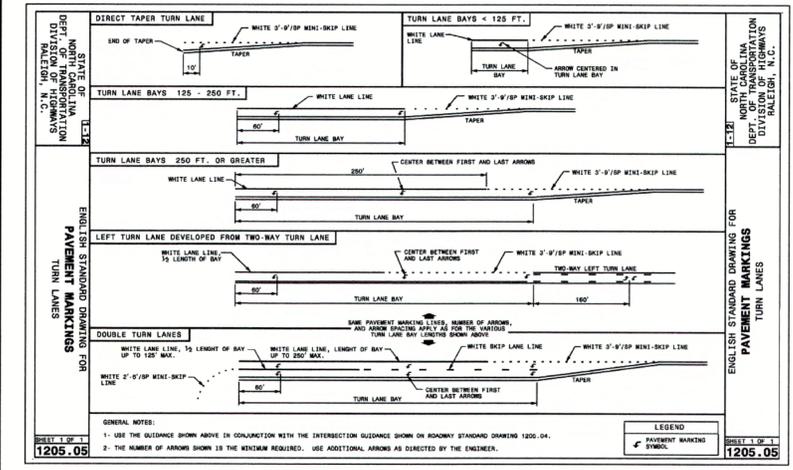
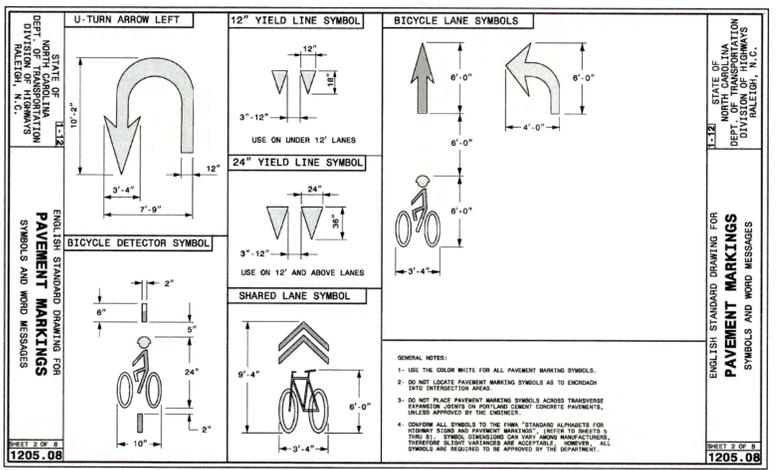
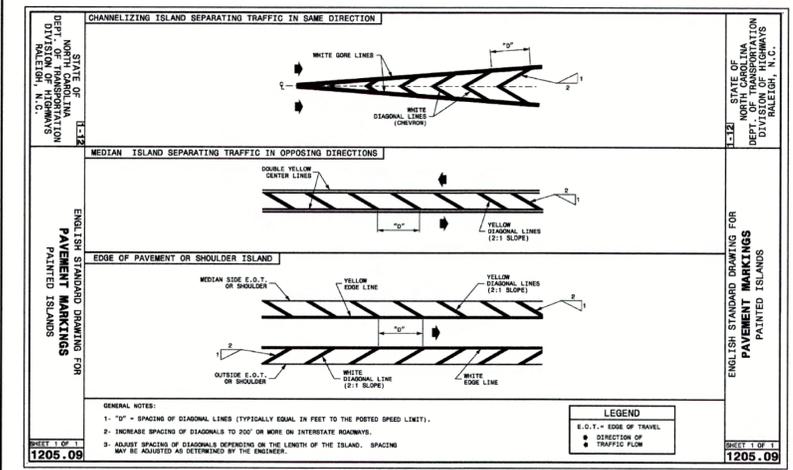
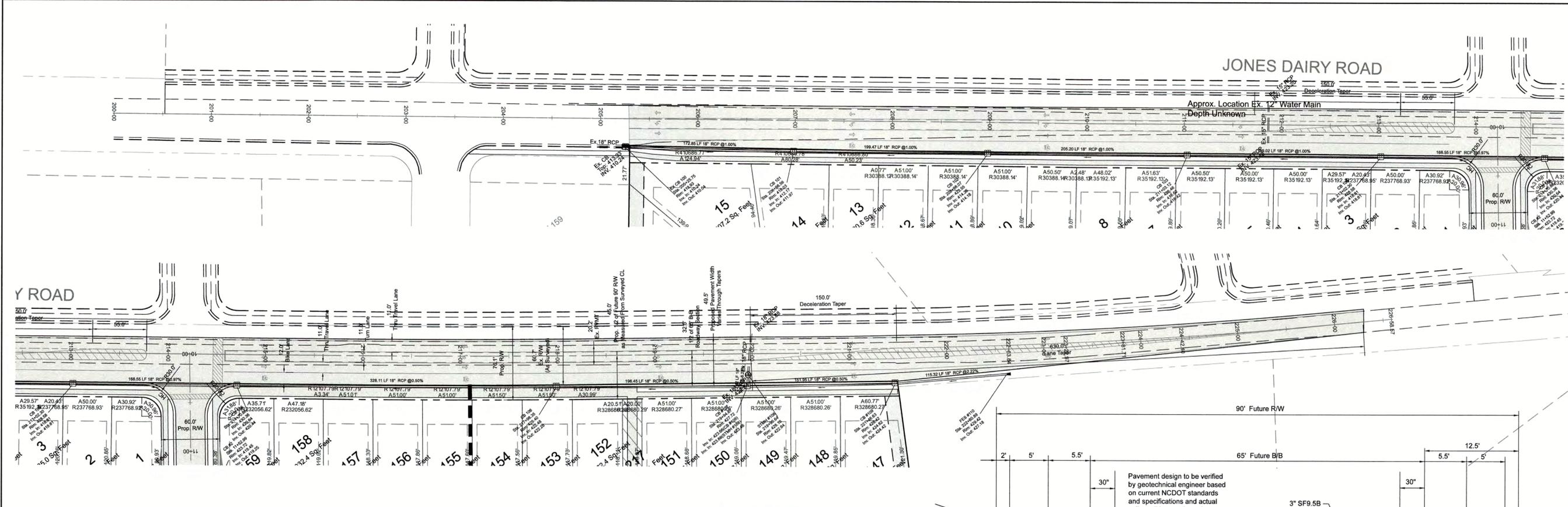


Michael A. Crowley
Professional Engineer
Date: 2021.02.12
112834-0500

Job No. JDF
Dwg No. C23

Graphic Scale





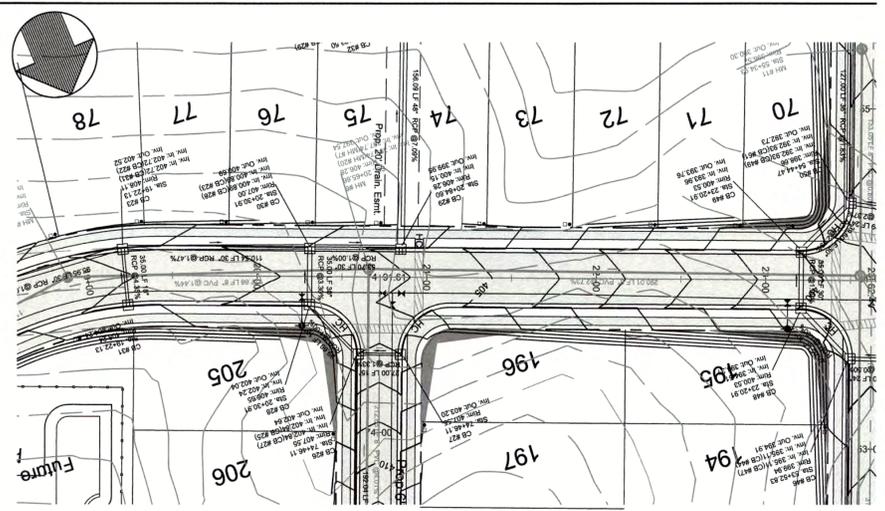
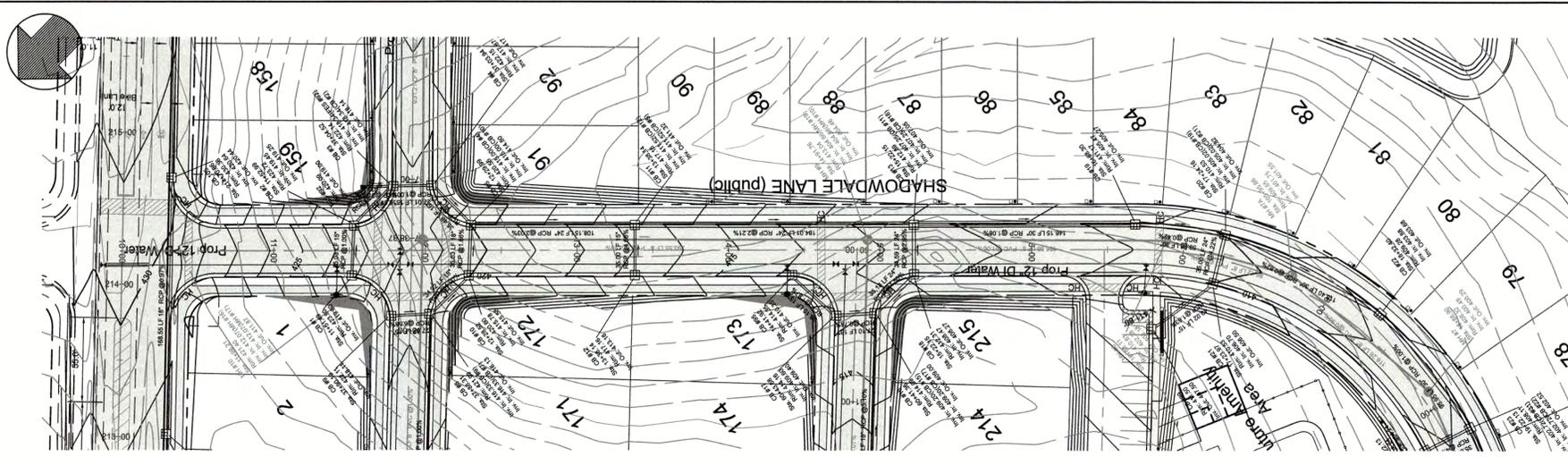
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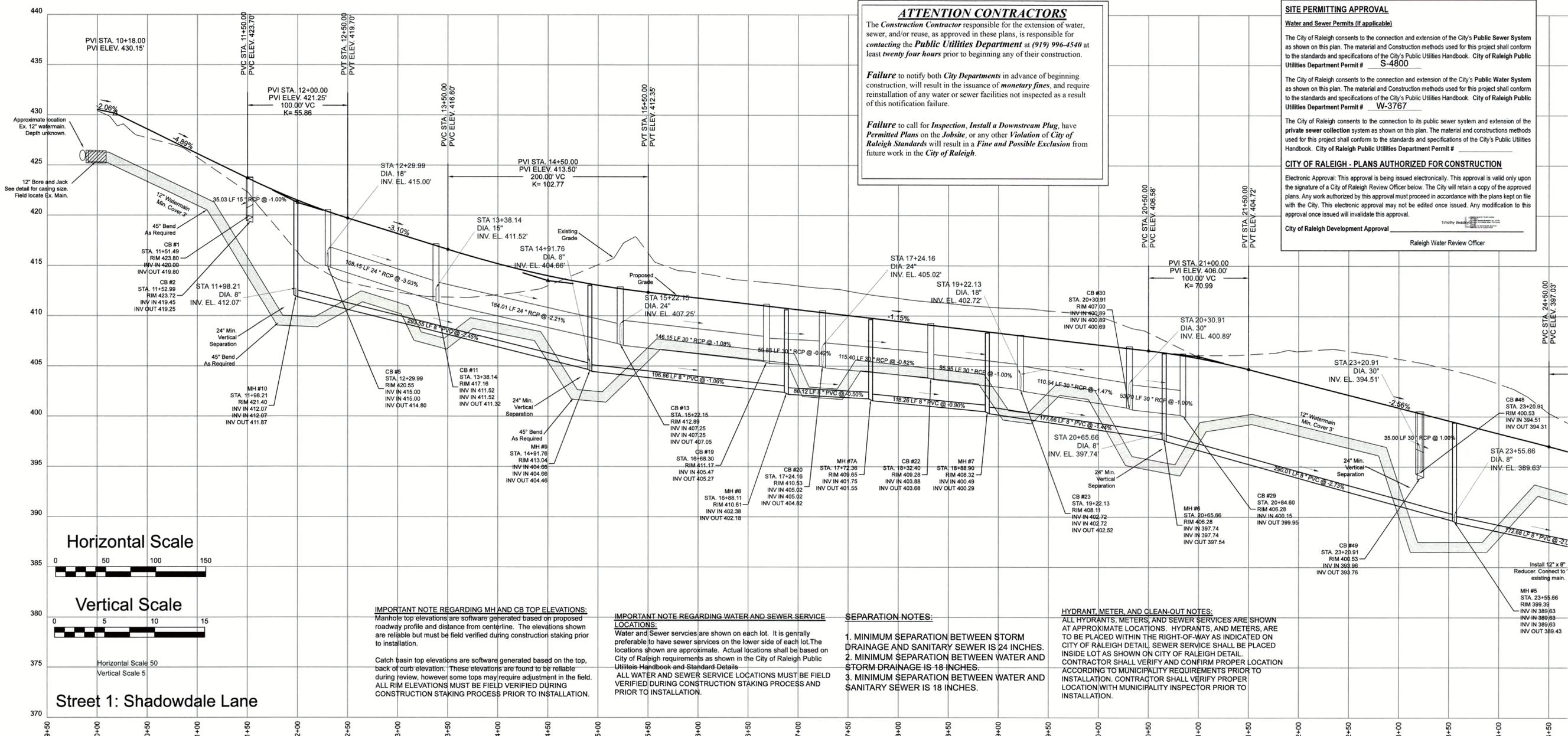


Jones Dairy Road Widening
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

Job No. JDF
Dwg No. C24



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ATTENTION CONTRACTORS
 The Construction Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-4540 at least twenty four hours prior to beginning any of their construction.
 Failure to notify both City Departments in advance of beginning construction, will result in the issuance of monetary fines, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.
 Failure to call for Inspection, Install a Downstream Plug, have Permitted Plans on the Jobsite, or any other Violation of City of Raleigh Standards will result in a Fine and Possible Exclusion from future work in the City of Raleigh.

SITE PERMITTING APPROVAL
Water and Sewer Permits (if applicable)
 The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # S-4800
 The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # W-3767
 The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit #
CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION
 Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.
 City of Raleigh Development Approval
 Raleigh Water Review Officer

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7	Date	By	Comment
8	Date	By	Comment

Michael Crowley
 Date: 2/28/2022
 Original signed by Michael Crowley
 Date: 2/28/2022

IMPORTANT NOTE REGARDING MH AND CB TOP ELEVATIONS:
 Manhole top elevations are software generated based on proposed roadway profile and distance from centerline. The elevations shown are reliable but must be field verified during construction staking prior to installation.
 Catch basin top elevations are software generated based on the top, back of curb elevation. These elevations are found to be reliable during review, however some tops may require adjustment in the field. ALL RIM ELEVATIONS MUST BE FIELD VERIFIED DURING CONSTRUCTION STAKING PROCESS PRIOR TO INSTALLATION.

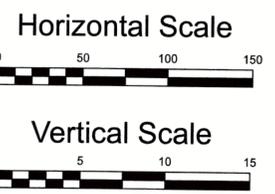
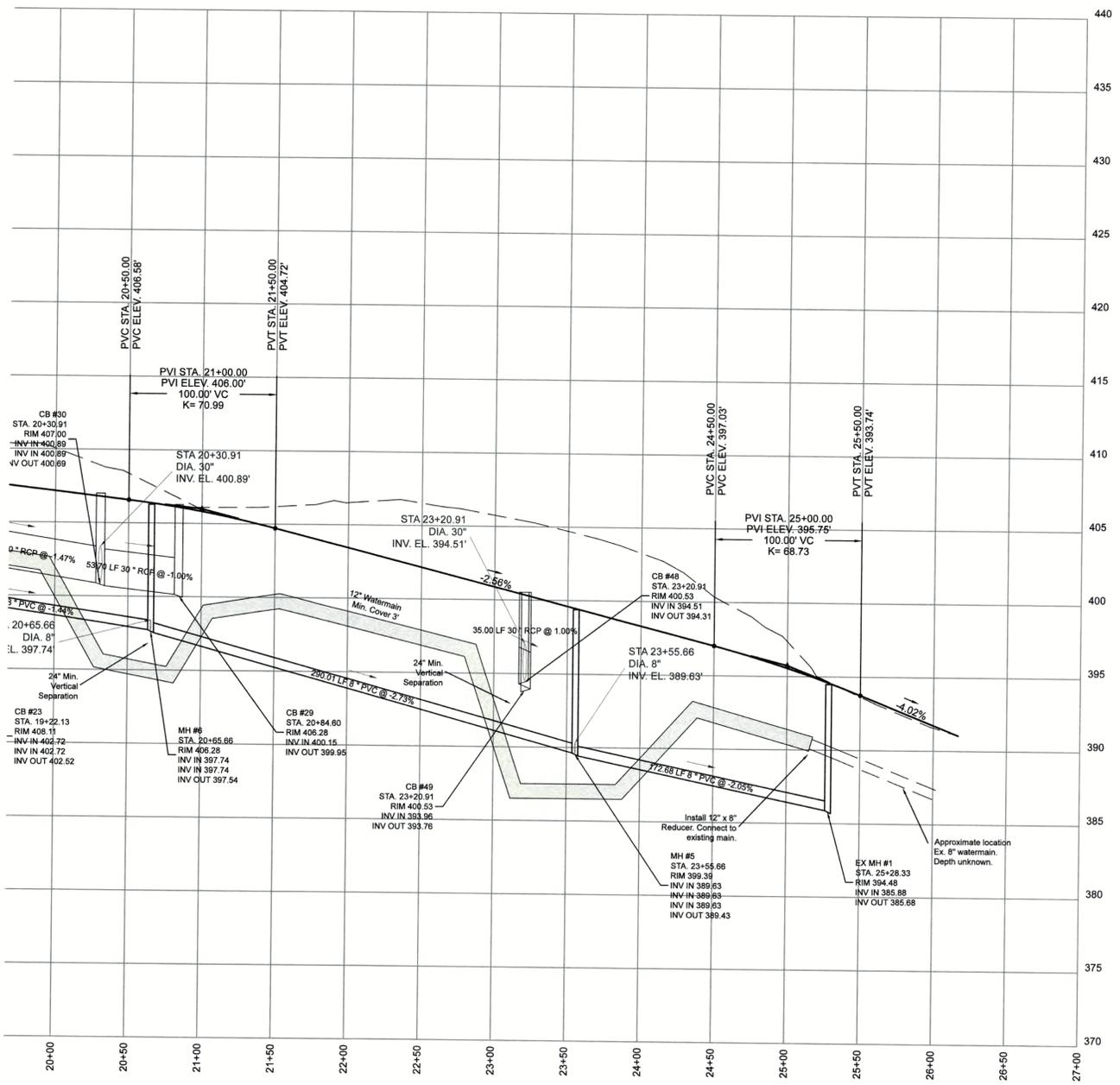
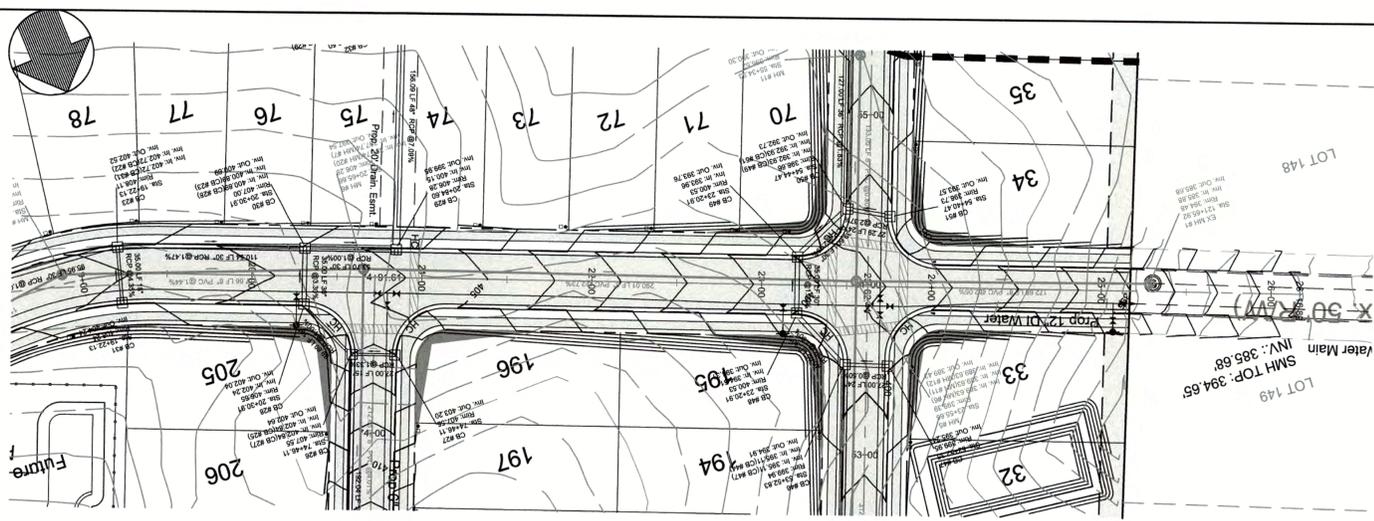
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 Water and Sewer services are shown on each lot. It is generally preferable to have sewer services on the lower side of each lot. The locations shown are approximate. Actual locations shall be based on City of Raleigh requirements as shown in the City of Raleigh Public Utilities Handbook and Standard Details.
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SEPARATION NOTES:
 1. MINIMUM SEPARATION BETWEEN STORM DRAINAGE AND SANITARY SEWER IS 24 INCHES.
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 3. MINIMUM SEPARATION BETWEEN WATER AND SANITARY SEWER IS 18 INCHES.

HYDRANT, METER, AND CLEAN-OUT NOTES:
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Shadowdale Lane
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. C25



IMPORTANT NOTE REGARDING MH AND CB TOP ELEVATIONS:
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ATTENTION CONTRACTORS

The Construction Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-4540 at least twenty four hours prior to beginning any of their construction.

Failure to notify both City Departments in advance of beginning construction, will result in the issuance of monetary fines, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for Inspection, Install a Downstream Plug, have Permitted Plans on the Jobsite, or any other Violation of City of Raleigh Standards will result in a Fine and Possible Exclusion from future work in the City of Raleigh.

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # S-4800

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # WV-3767

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
 Raleigh Water Review Officer



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 McIntyre, Gettle, Crowley
 PROFESSIONAL ENGINEERS

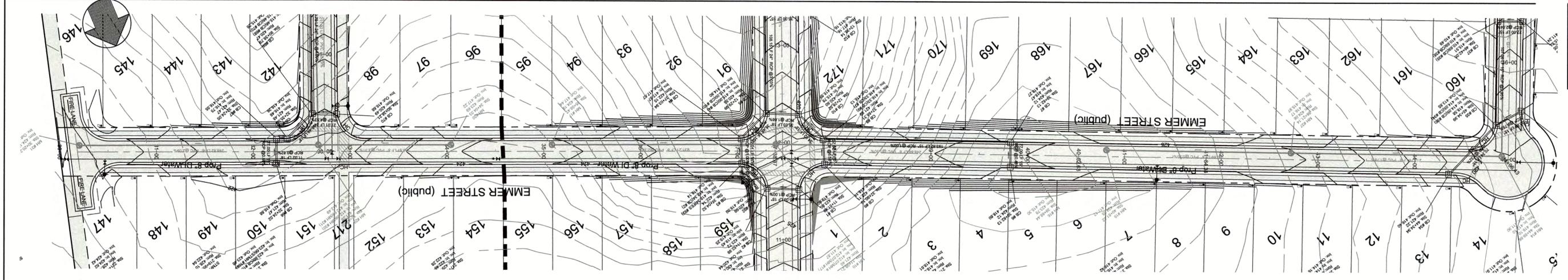
1233 Heritage Lakes Drive, Wake Forest, North Carolina 27587
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 819/255-5725
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 C-2151

NO.	DATE	REVISION DESCRIPTION	BY
1	05/09/2021	Preliminary Construction Plans	MAC
2	10/29/2021	Revised per 1st review comments	MAC
3	11/25/2021	Town, Raleigh Comments	MAC
4	01/17/2022	Town Comments	MAC
5	02/12/2022	Issued for signature approval	MAC
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

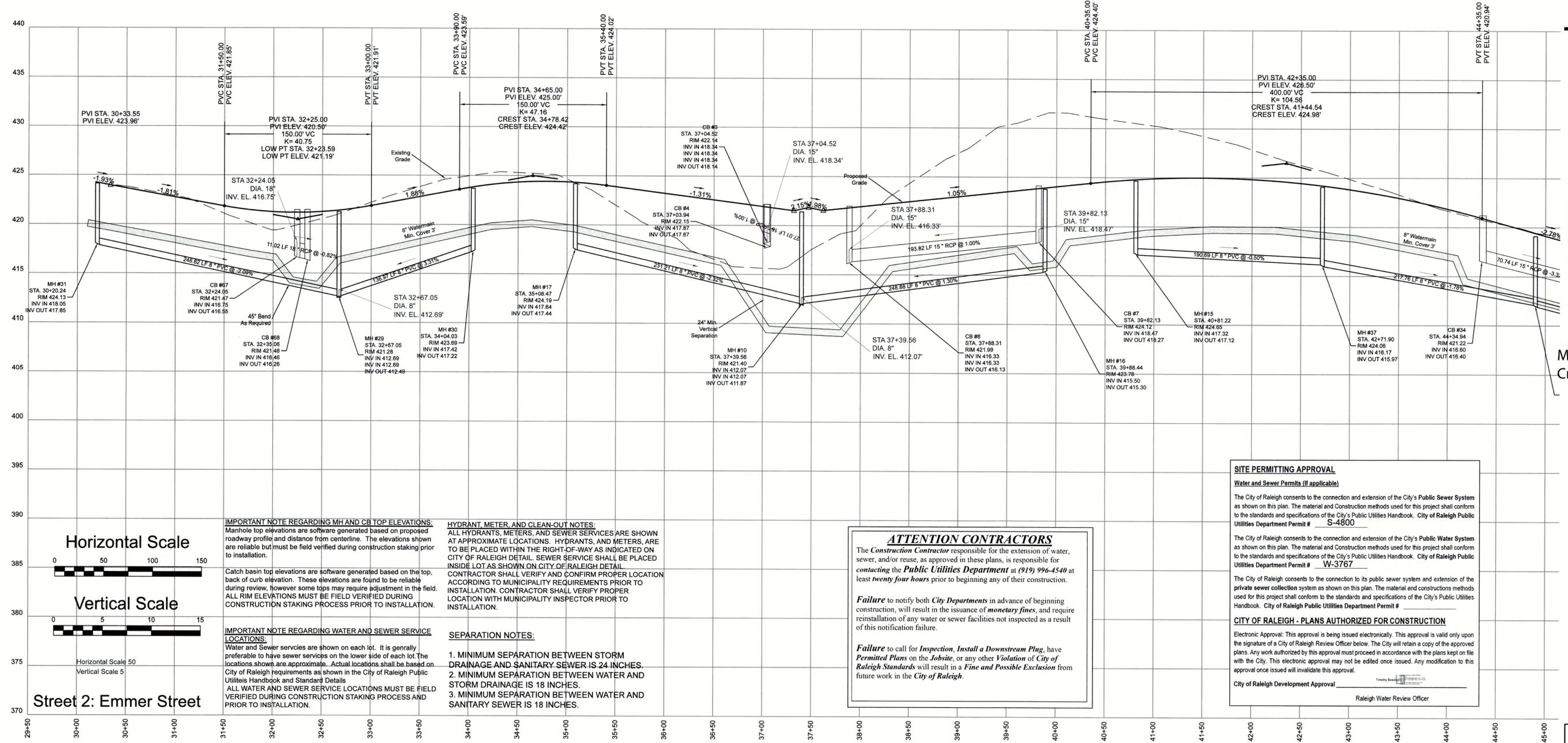
Digitally signed by Michael A. Crowley
 Date: 2021.02.11 10:42:05-0500
 Michael A. Crowley

Shadowdale Lane
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. **C26**



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 McIntyre, Gettle, Crowley
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 4832B Windy Hill Drive, Raleigh, North Carolina 27669
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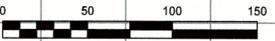


NO	DATE	REVISION DESCRIPTION	BY
1	06/16/2020	Preliminary Construction Plans	MAC
2	10/22/2020	Revised per 1st review comments	MAC
3	11/26/2020	Town, Raleigh Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/19/2021	Issued for signature approval	By
6		Comment	By
7		Comment	By
8		Comment	By

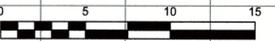
Digitally signed
 Michael Crowley
 Date: 2021.02.12
 10:30:00 -05'00'

Emmer Street
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Horizontal Scale



Vertical Scale



Horizontal Scale 50

Vertical Scale 5

Street 2: Emmer Street

IMPORTANT NOTE REGARDING MH AND CB TOP ELEVATIONS:
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ATTENTION CONTRACTORS

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SITE PERMITTING APPROVAL

Water and Sewer Permits (If applicable)

The City of Raleigh consents to the connection and extension of the City's **Public Sewer System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **S-4800**

The City of Raleigh consents to the connection and extension of the City's **Public Water System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **W-3767**

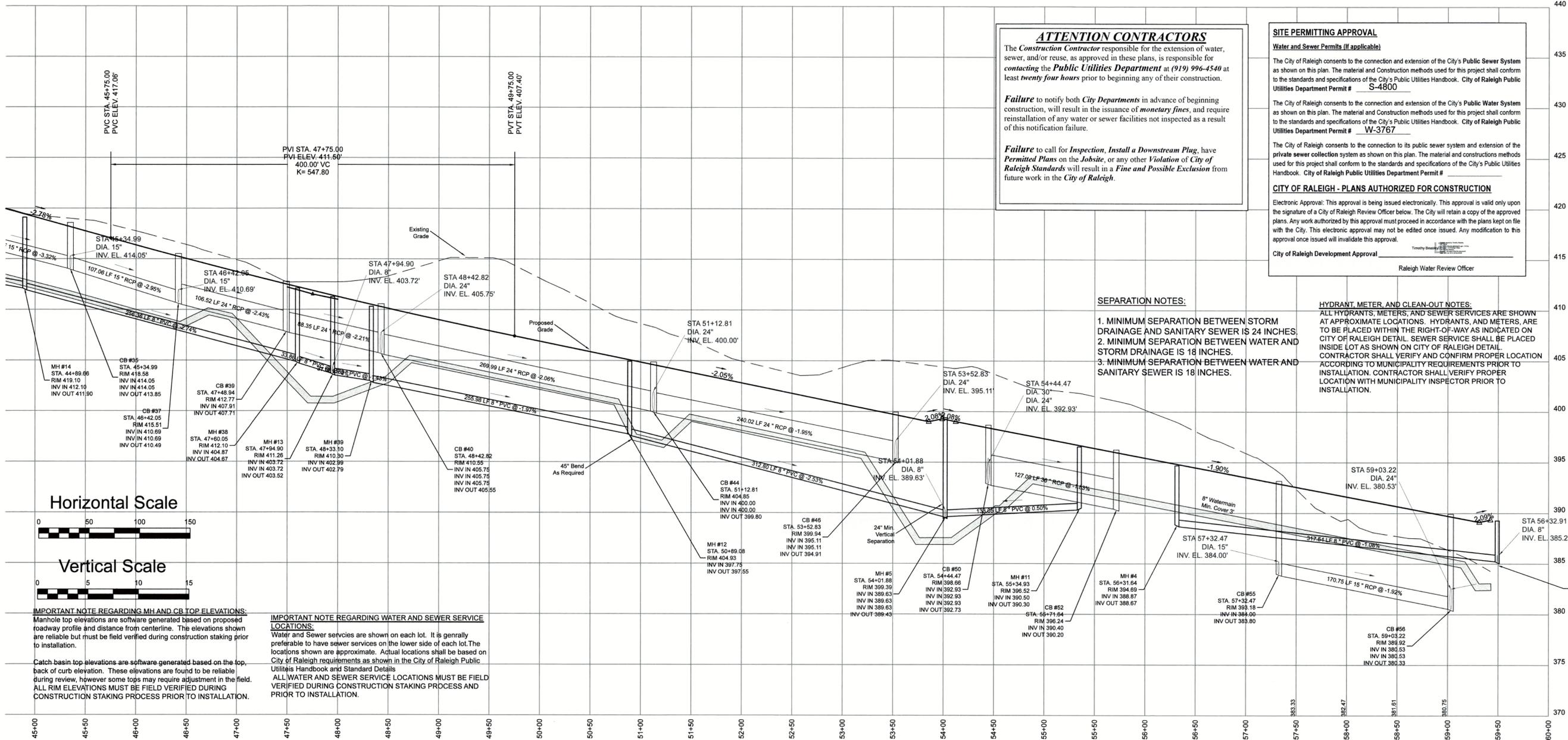
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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval _____
 Raleigh Water Review Officer _____

Job No. JDF
 Dwg No. **C27**



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City of Raleigh Development Approval
 Raleigh Water Review Officer

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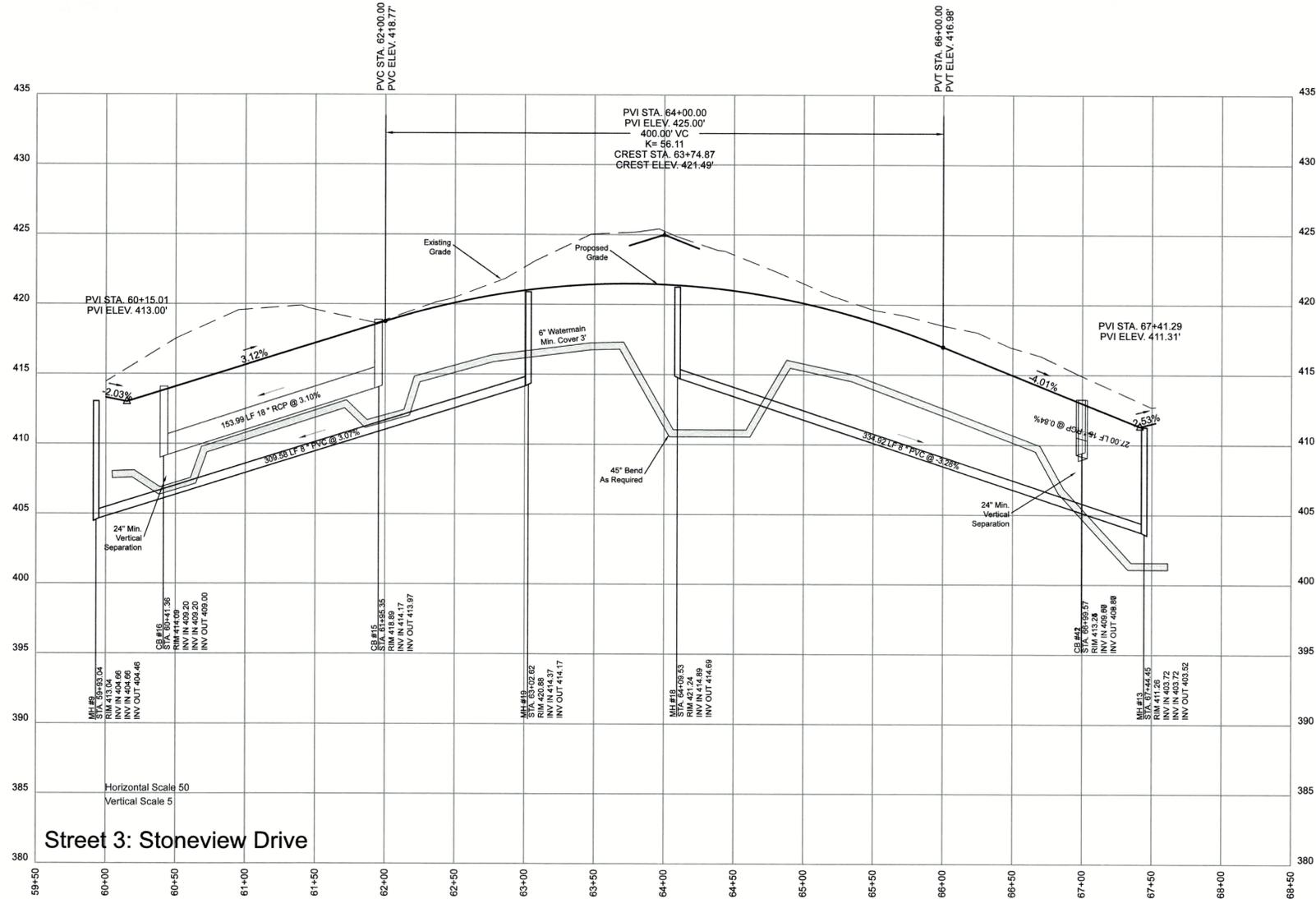
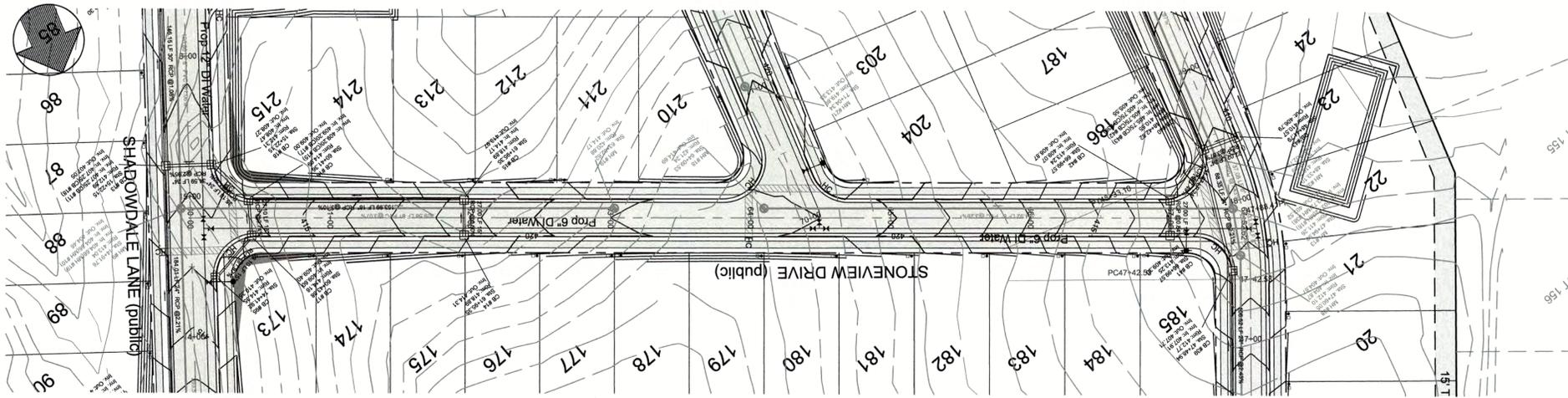
1233 Heritage Links Drive, Wake Forest, North Carolina 27587
 4622B Winny Hill (919) 252-5755
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 C-2151

NO.	DATE	REVISION DESCRIPTION	BY
1	05/08/2020	Preliminary Construction Plans	MAC
2	10/23/2020	Revised per 1st review comments	MAC
3	11/25/2020	Town, Raleigh Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/12/2021	Issued for signature approval	By
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Digitally signed by Michael Crowley
 Date: 2021.02.12 11:05:05 -05'00'

Emmer Street
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. **C28**



Horizontal Scale



Vertical Scale



IMPORTANT NOTE REGARDING WATER AND SEWER SERVICE LOCATIONS:
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SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

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The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **W-3767**

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval _____
Raleigh Water Review Officer

ATTENTION CONTRACTORS

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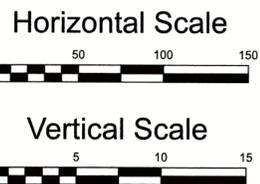
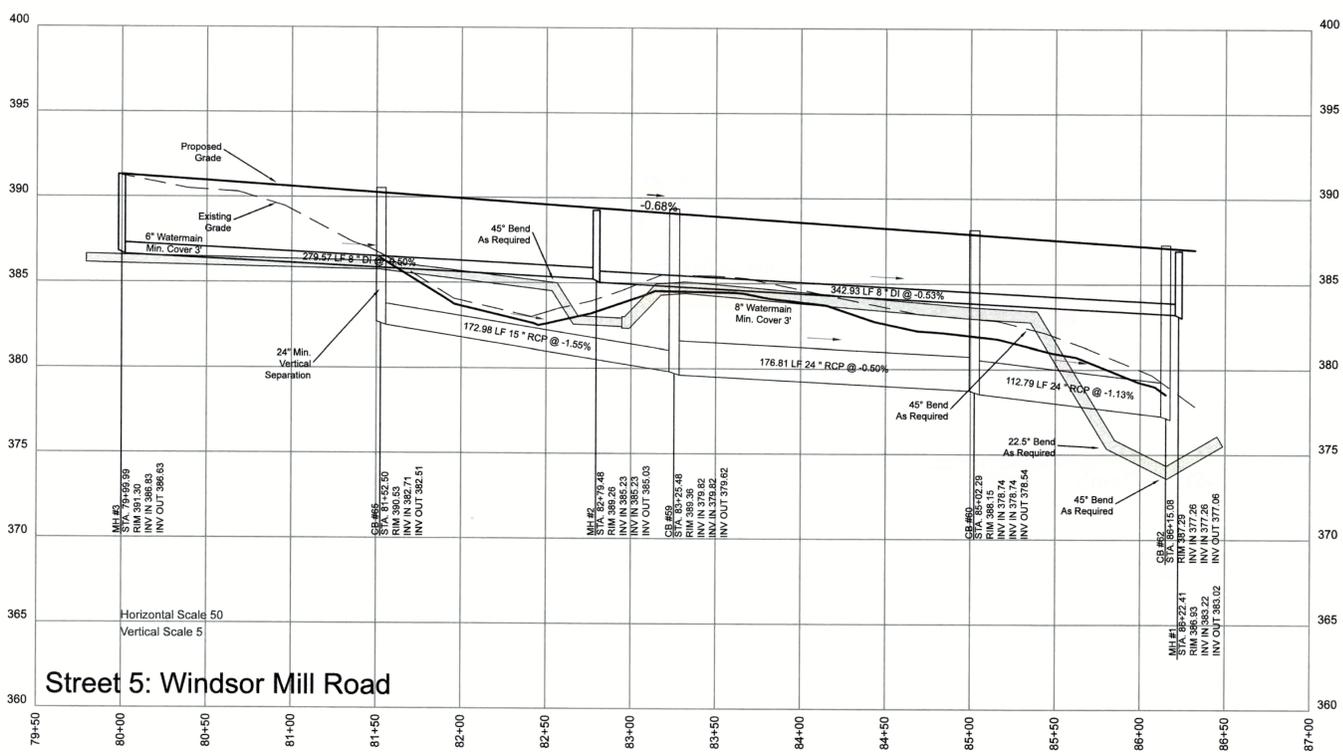
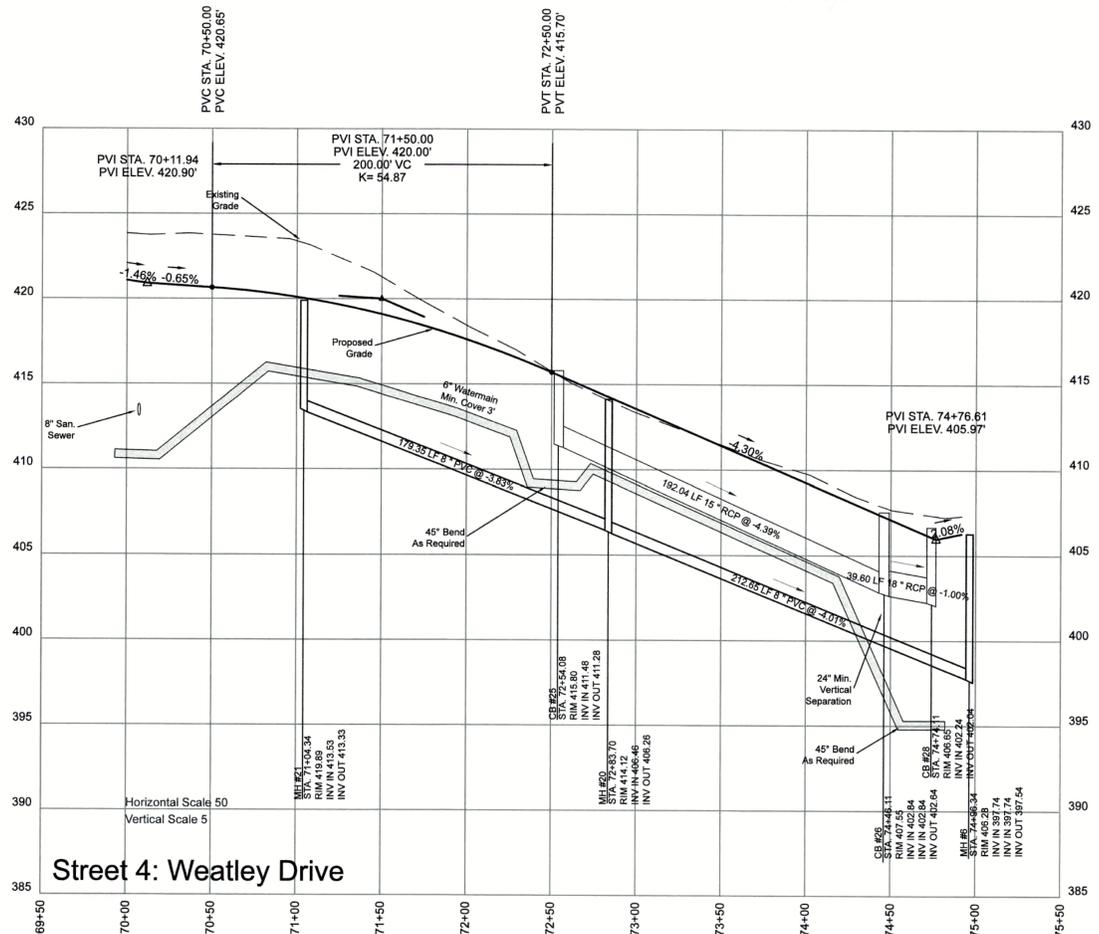
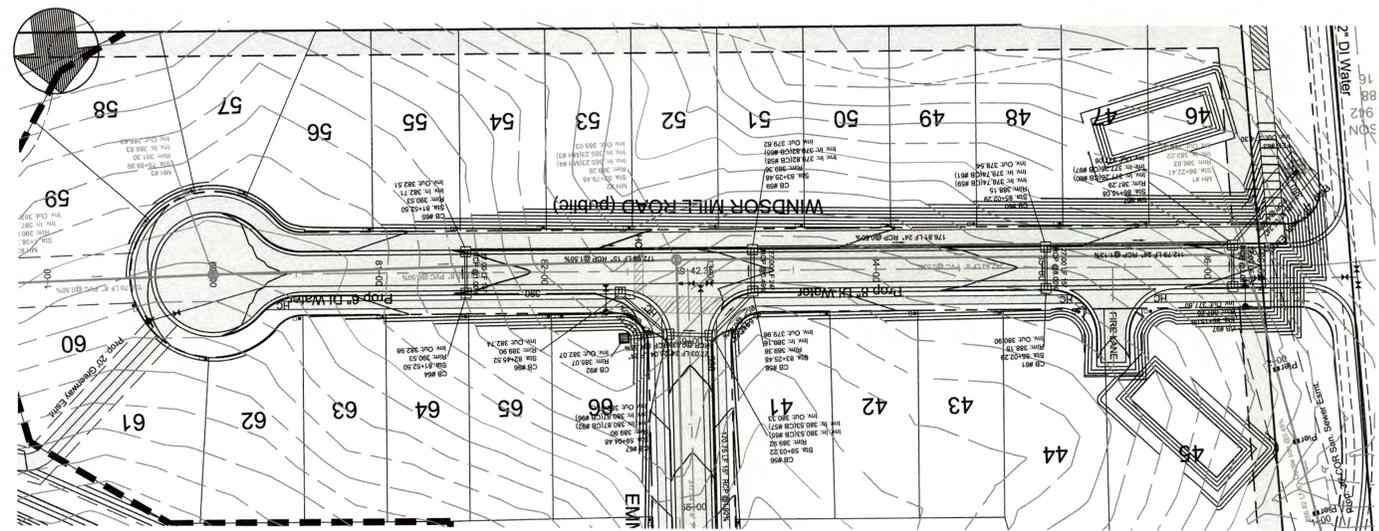
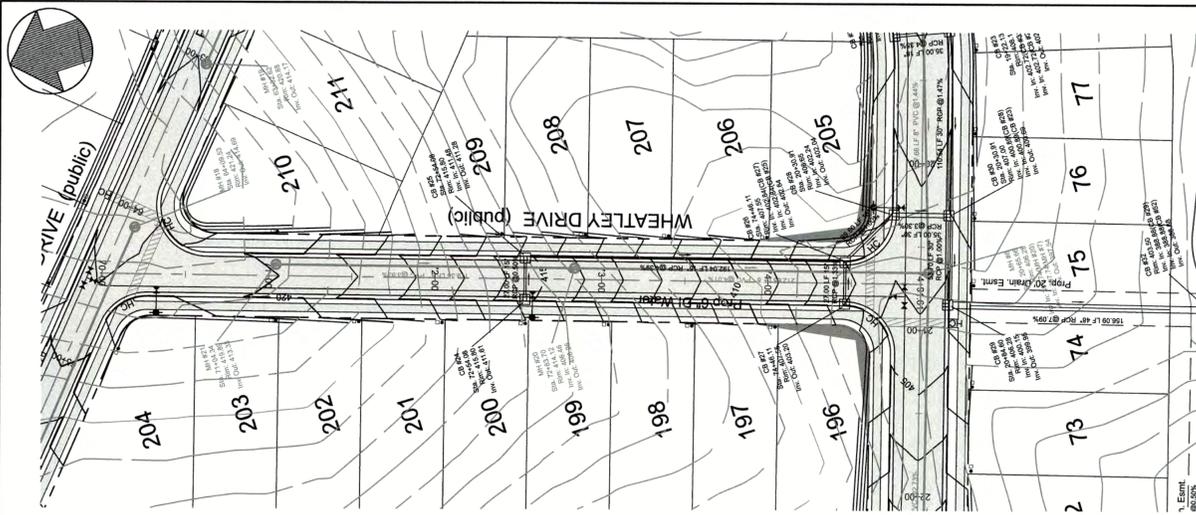
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PROFESSIONAL ENGINEERS
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4852B Winy Hill Drive, Raleigh, North Carolina 27609
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NO.	DATE	REVISION DESCRIPTION	BY
1	05/09/2020	Preliminary Construction Plans	MAC
2	10/22/2020	Revised per 1st review comments	MAC
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4	01/11/2021	Town Comments	MAC
5	02/12/2021	Issued for signature approval	MAC
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Digitally signed by Michael Crowley
Date: 2021.02.12 11:24:05-05'00'

Stoneview Drive
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

Job No. JDF
Dwg No. **C29**



IMPORTANT NOTE REGARDING MH AND CB TOP ELEVATIONS:
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SITE PERMITTING APPROVAL
Water and Sewer Permits (if applicable)

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City of Raleigh Development Approval _____
Raleigh Water Review Officer



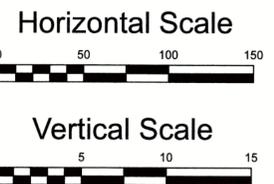
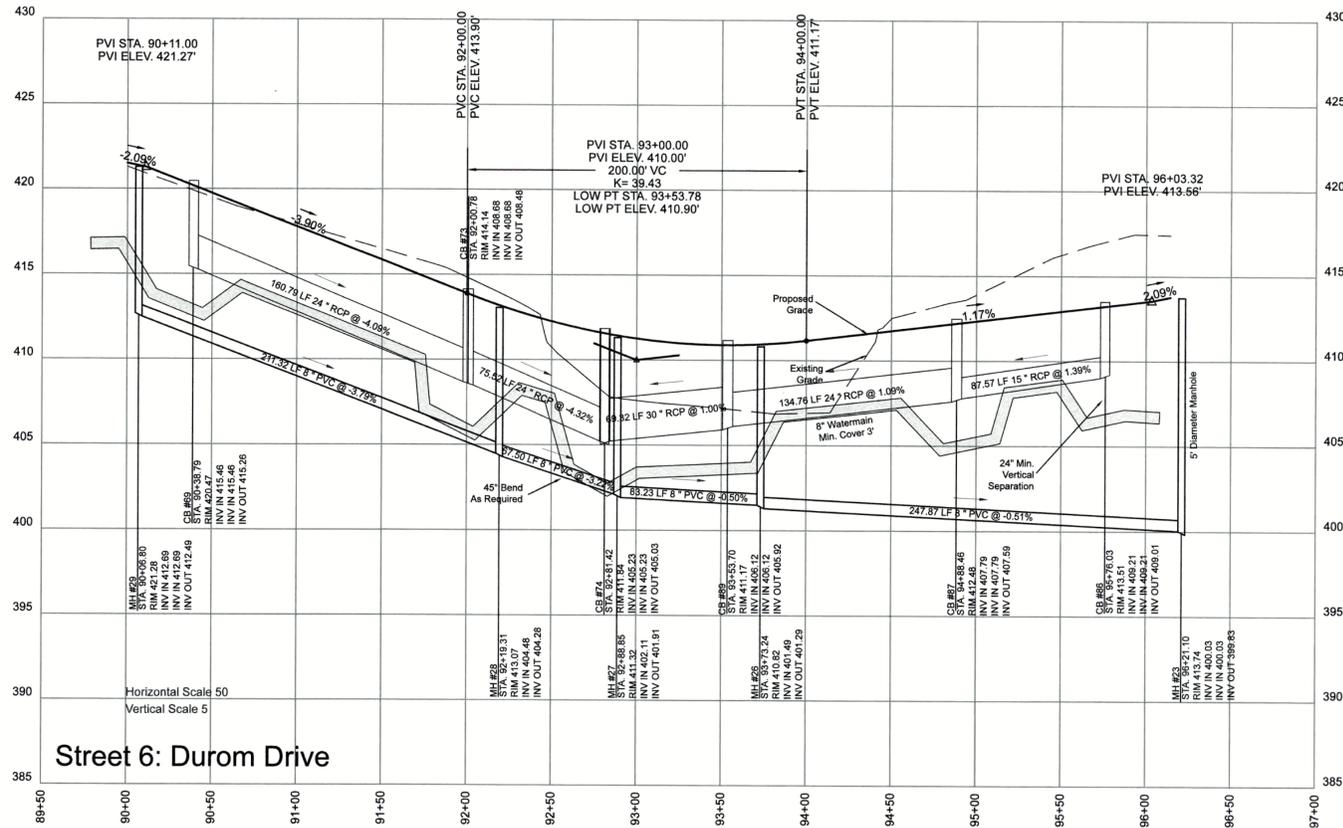
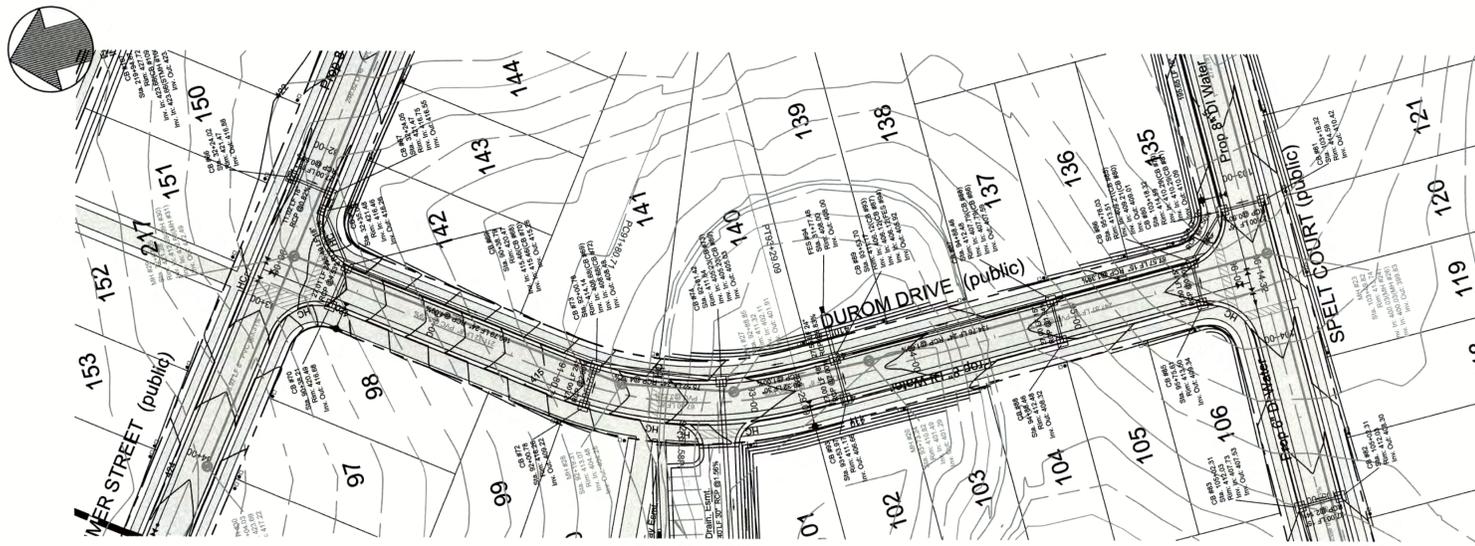
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NO	DATE	REVISION DESCRIPTION	BY
1	06/08/2020	Preliminary Construction Plans	MAC
2	10/23/2020	Revised per 1st review comments	MAC
3	11/25/2020	Town, Raleigh Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/12/2021	Issued for signature approval	MAC
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By



Wheatley, Windsor Mill Drive
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

Job No. JDF
Dwg No. **C30**



IMPORTANT NOTE REGARDING MH AND CB TOP ELEVATIONS:
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SEPARATION NOTES:

1. MINIMUM SEPARATION BETWEEN STORM DRAINAGE AND SANITARY SEWER IS 24 INCHES.
2. MINIMUM SEPARATION BETWEEN WATER AND STORM DRAINAGE IS 18 INCHES.
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SITE PERMITTING APPROVAL
Water and Sewer Permits (if applicable)

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval _____
Raleigh Water Review Officer

ATTENTION CONTRACTORS

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Failure to notify both **City Departments** in advance of beginning construction, will result in the issuance of **monetary fines**, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

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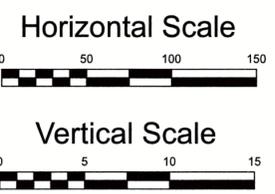
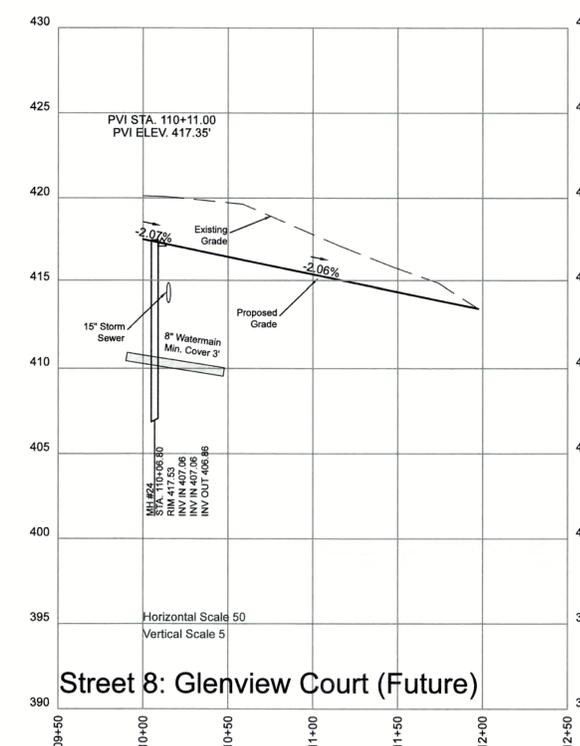
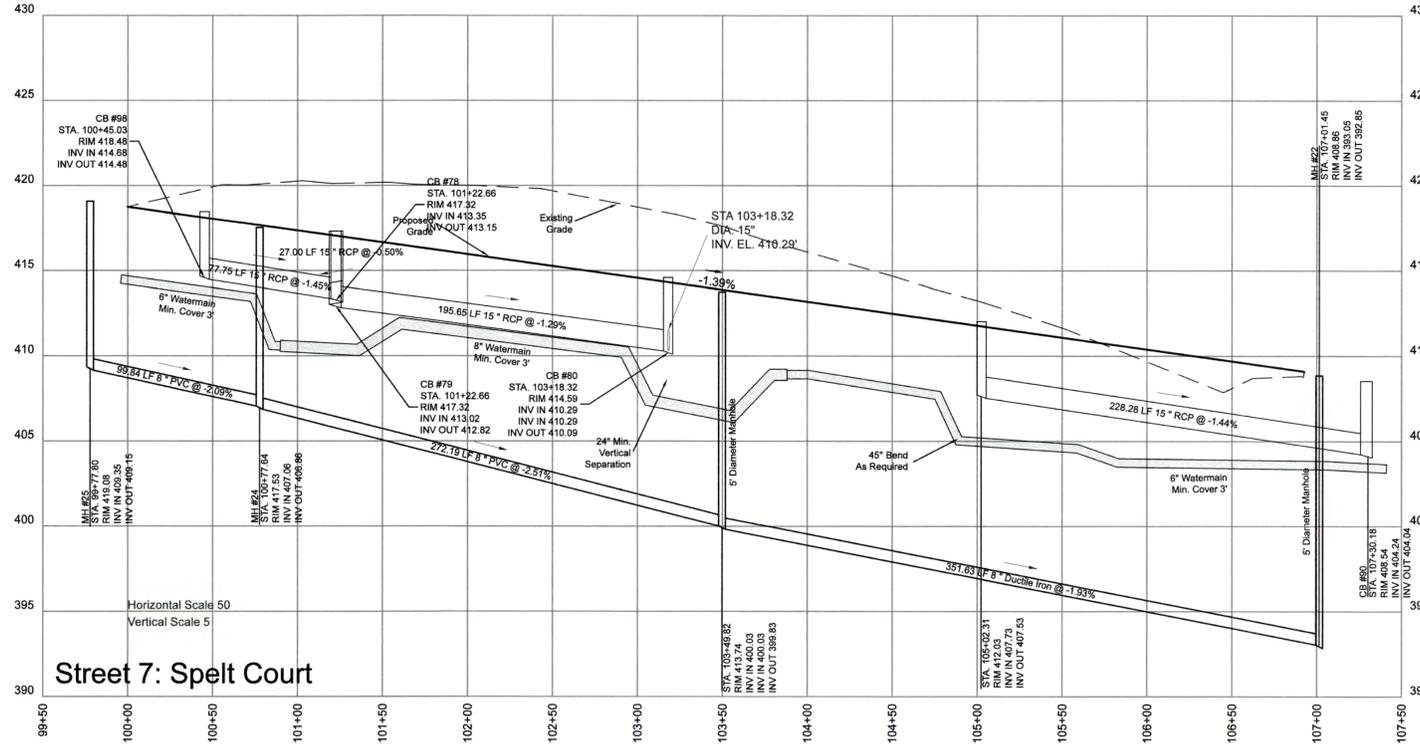
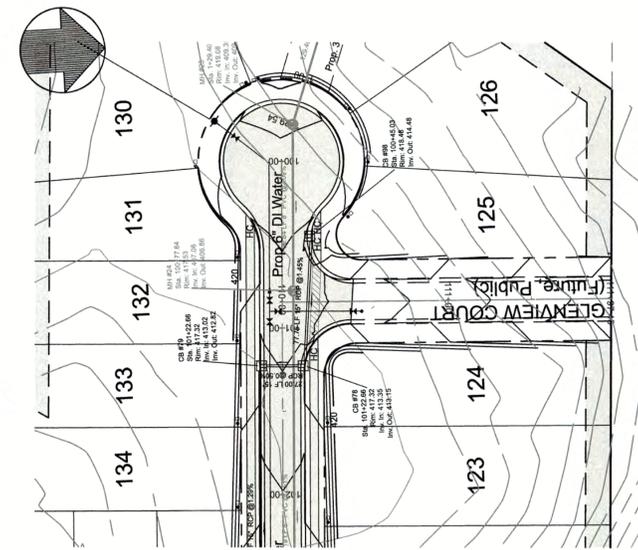
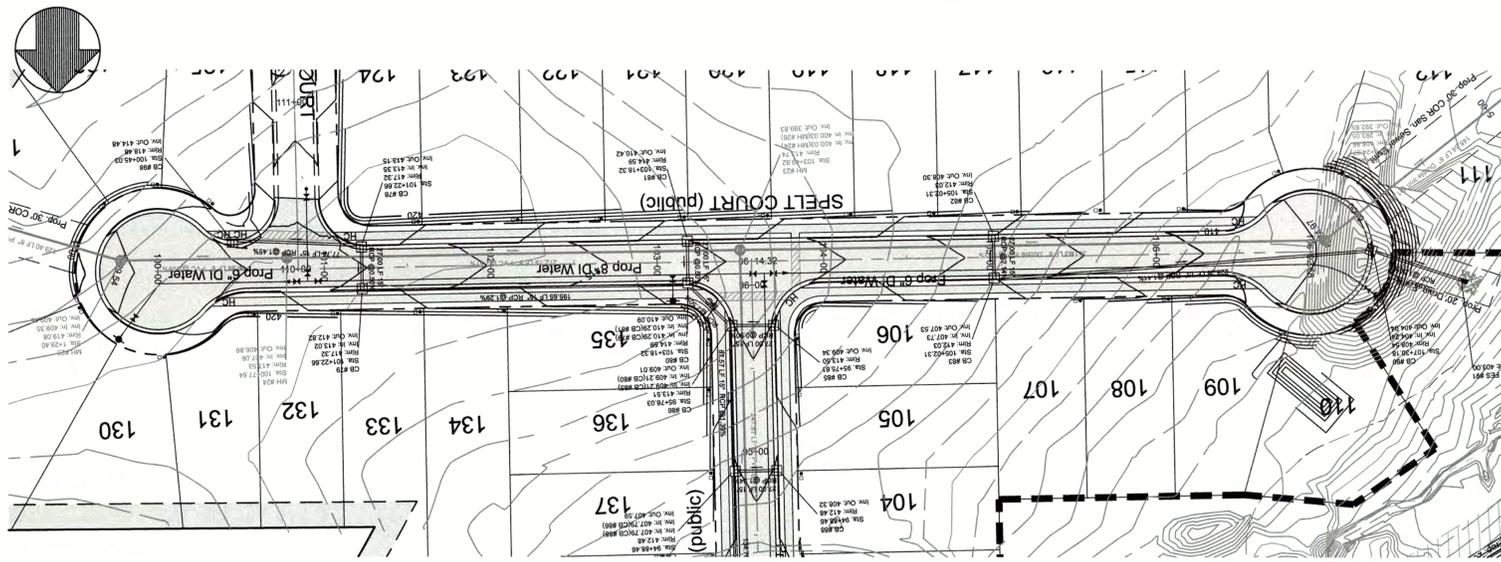
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6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Digitally signed by Michael A. Crowley
Date: 2021.12.10 10:05:00
SHA-256

Durom Drive
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

Job No. JDF
Dwg No. **C31**



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SITE PERMITTING APPROVAL
Water and Sewer Permits (if applicable)

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval _____
Raleigh Water Review Officer

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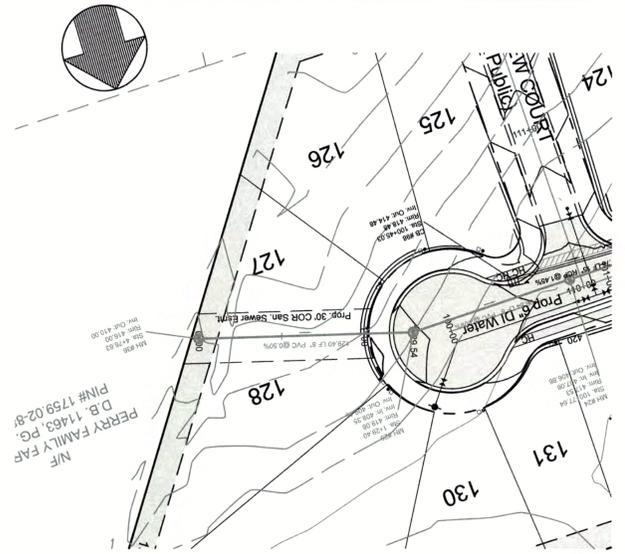
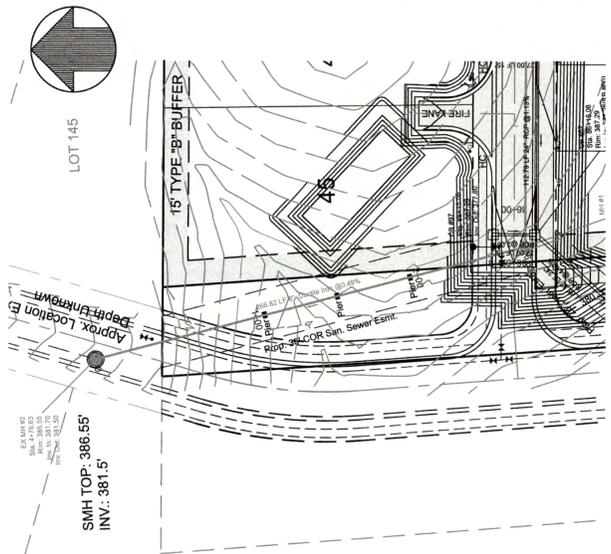
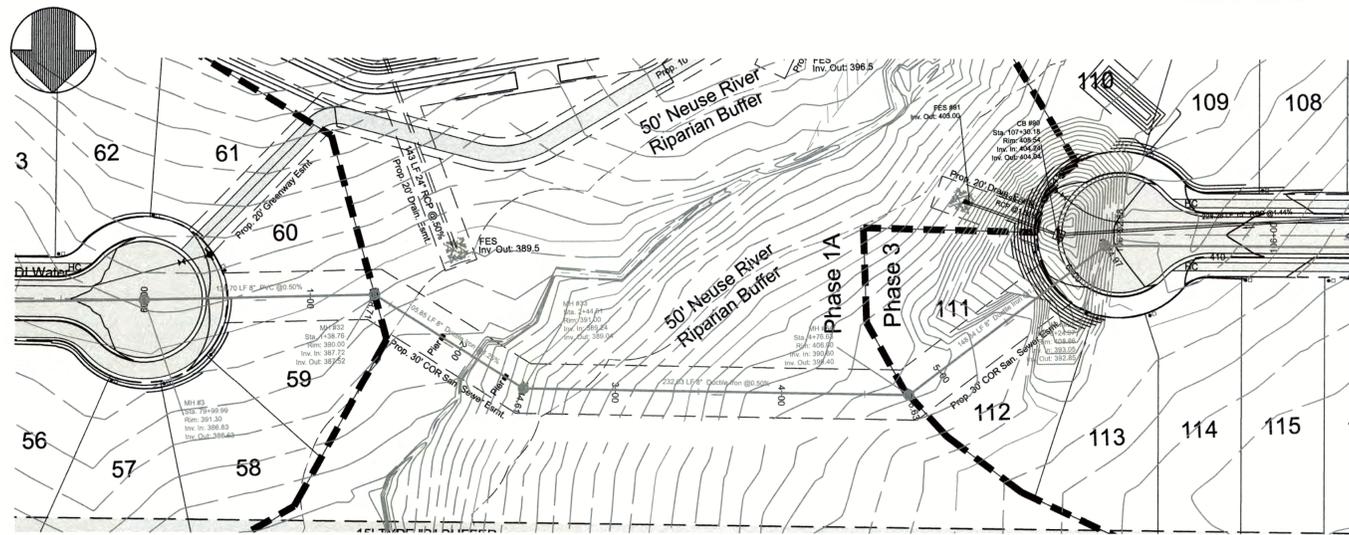
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(919) 925-5755
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NO.	DATE	REVISION DESCRIPTION	BY
1	05/08/2020	Preliminary Construction Plans	MAC
2	10/22/2020	Reviewed per 1st review comments	MAC
3	11/25/2020	Town Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/12/2021	Issued for signature approval	By
6		Comment	By
7		Comment	By
8		Comment	By

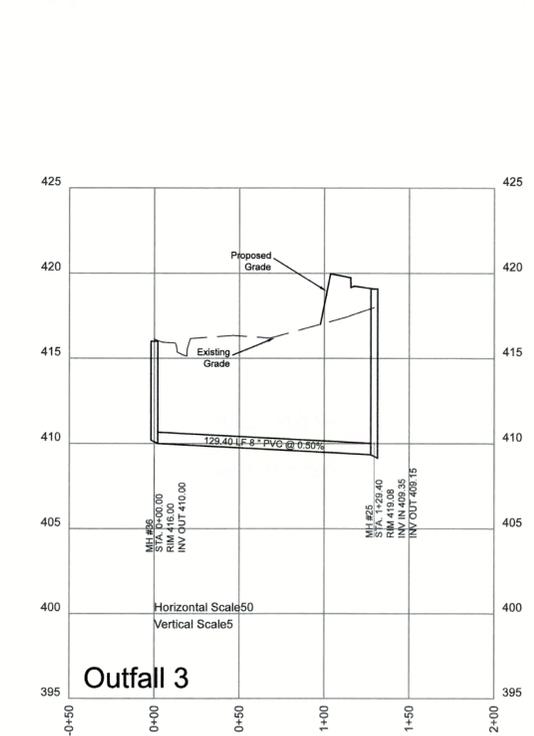
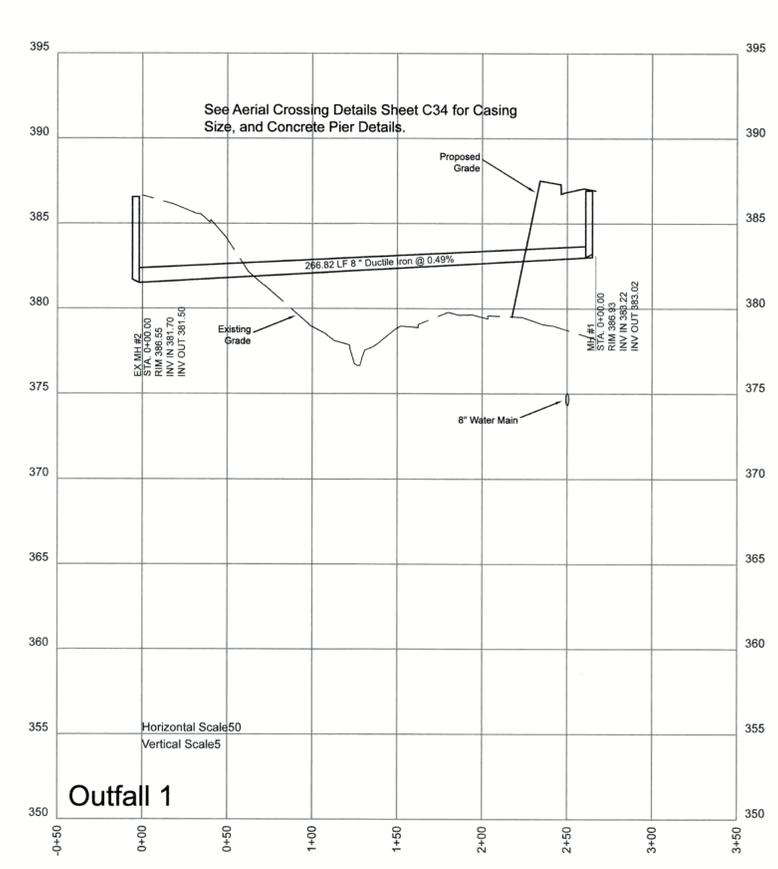
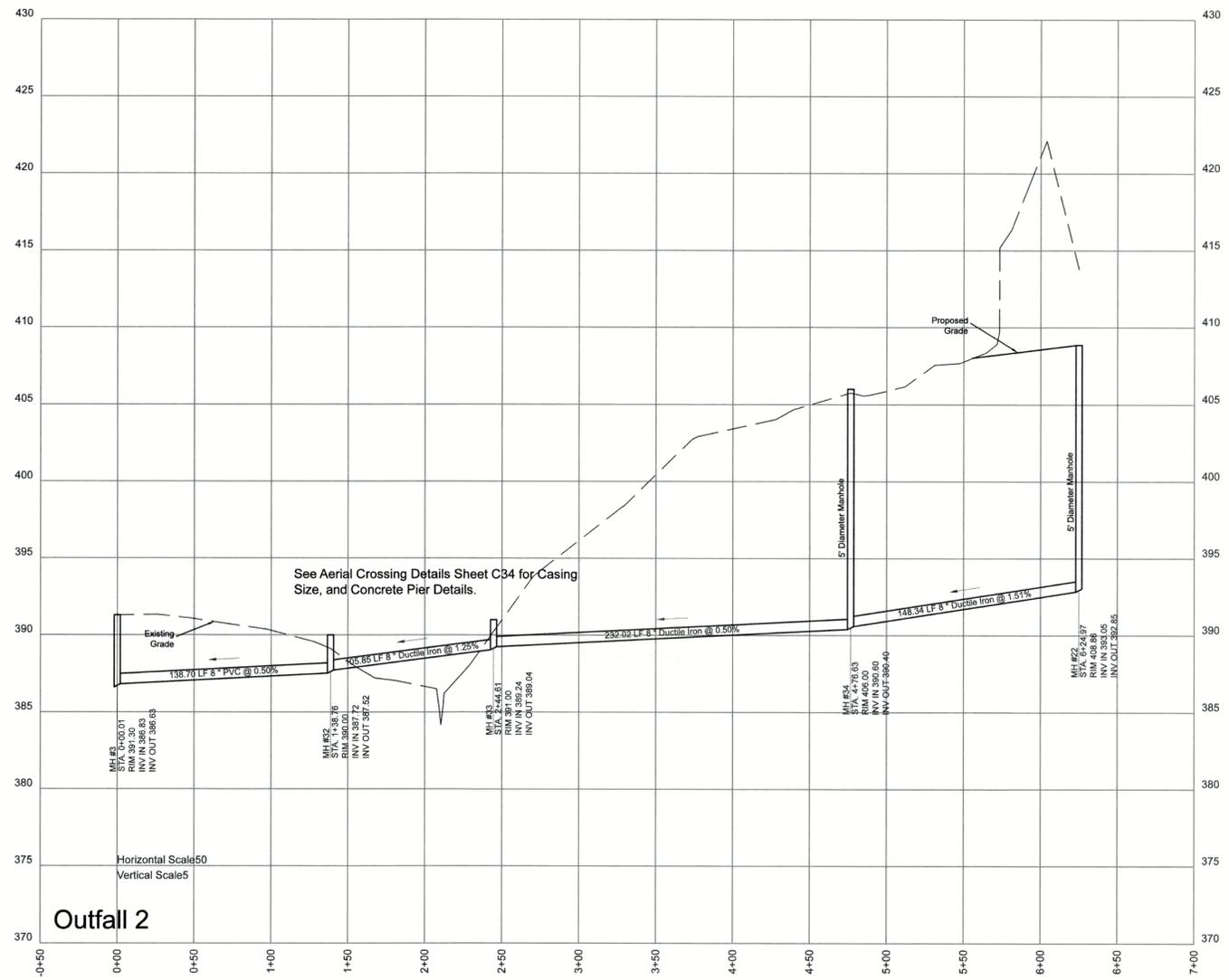
Digitally signed
Michael Crowley
Date: 2023.02.12 13:05:00
Michael Crowley

Spelt, Glenview Court
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

Job No. JDF
Dwg No. **C32**



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NO	DATE	REVISION DESCRIPTION	BY
1	05/09/2021	Preliminary Construction Phase	MAC
2	10/29/2021	Revised per 1st review comments	MAC
3	11/29/2021	Town Review Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/12/2021	Issued for signature approval	By
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Digitally signed by Michael Crowley
 Date: 2023.05.02 12:45:00
 Michael Crowley

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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

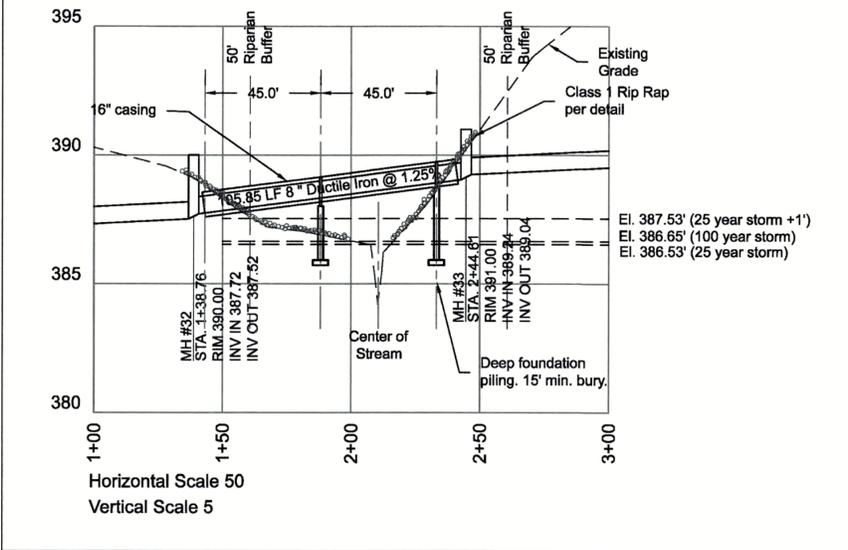
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City of Raleigh Development Approval _____
 Raleigh Water Review Officer

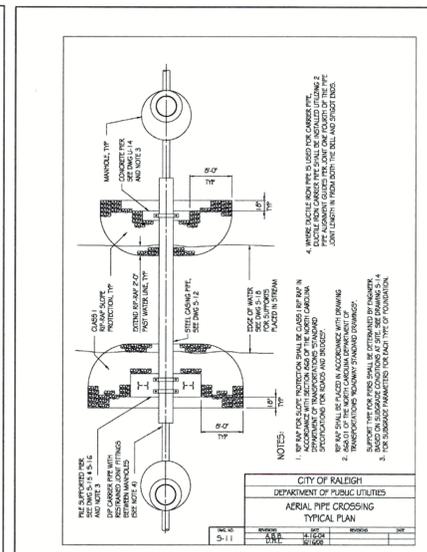
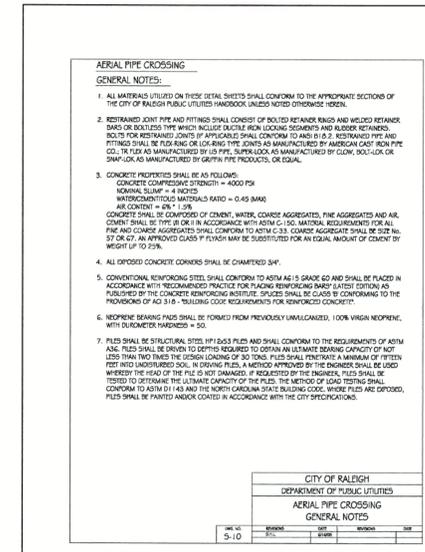
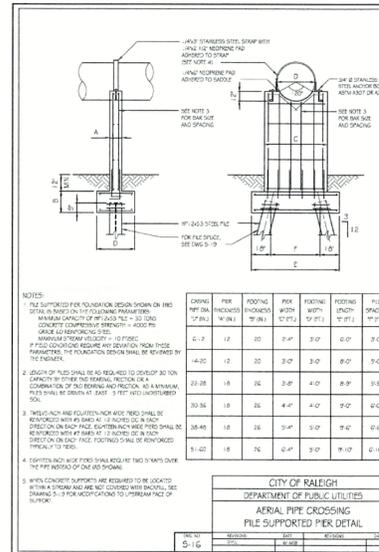
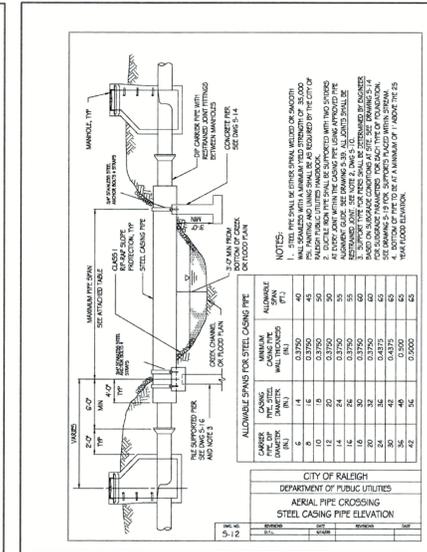
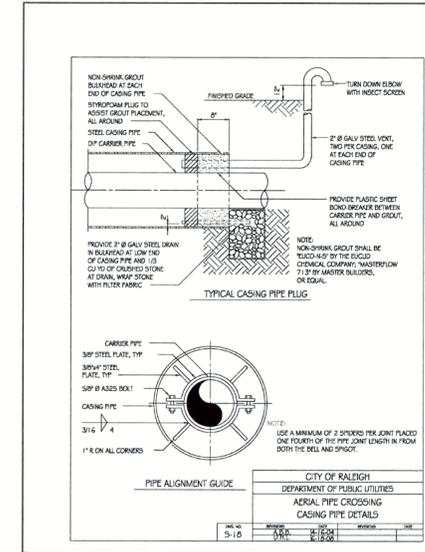
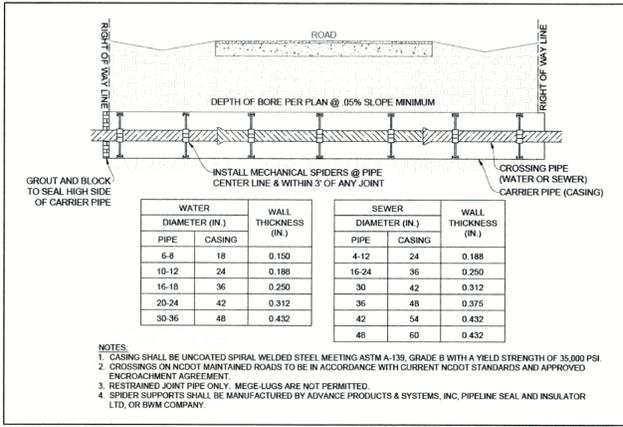
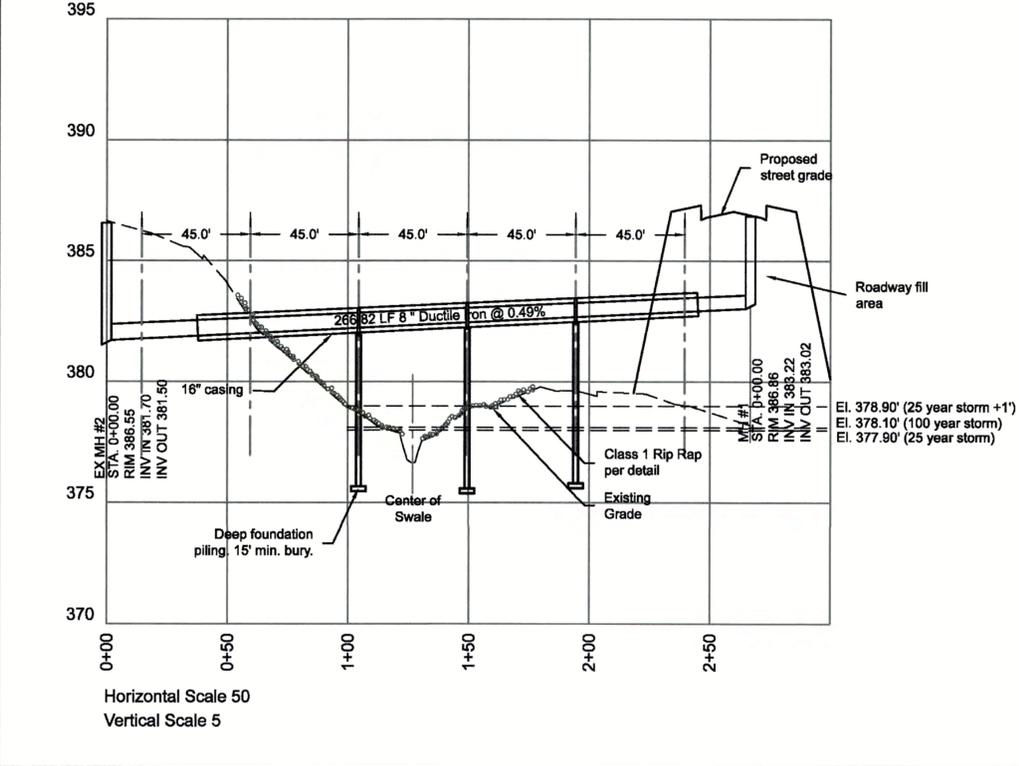
Sewer Outfall
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. C33

Aerial Crossing #1 Detail



Aerial Crossing #2 Detail



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NO.	DATE	BY	REVISION DESCRIPTION
1	05/08/2020	Michael Crowley	Preliminary Construction Plans
2	10/22/2020	Michael Crowley	Revised per 1st review comments
3	11/25/2020	Michael Crowley	Town Comments
4	01/11/2021	Michael Crowley	Issued for signature approval
5	02/12/2021	Michael Crowley	Comment
6	03/01/2021	Michael Crowley	Comment
7	03/01/2021	Michael Crowley	Comment
8	03/01/2021	Michael Crowley	Comment
9	03/01/2021	Michael Crowley	Comment
10	03/01/2021	Michael Crowley	Comment

Michael Crowley
 Digitally signed
 Date: 2021.03.01 10:05:00
 Michael Crowley

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 Raleigh Water Review Officer _____

Aerial Crossing Details
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. C34



caaENGINEERS, Inc.
McIntyre, Gattie, Crowley
PROFESSIONAL ENGINEERS
1233 Hightega Lakes Drive, Wake Forest, North Carolina 27587
4832B Windy Hill (919)626-6725
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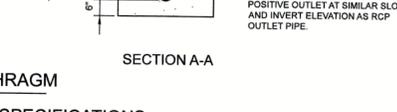
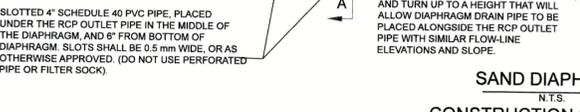
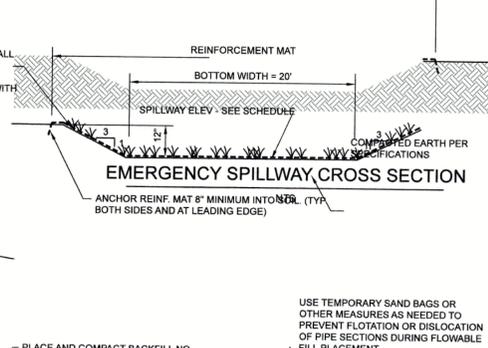
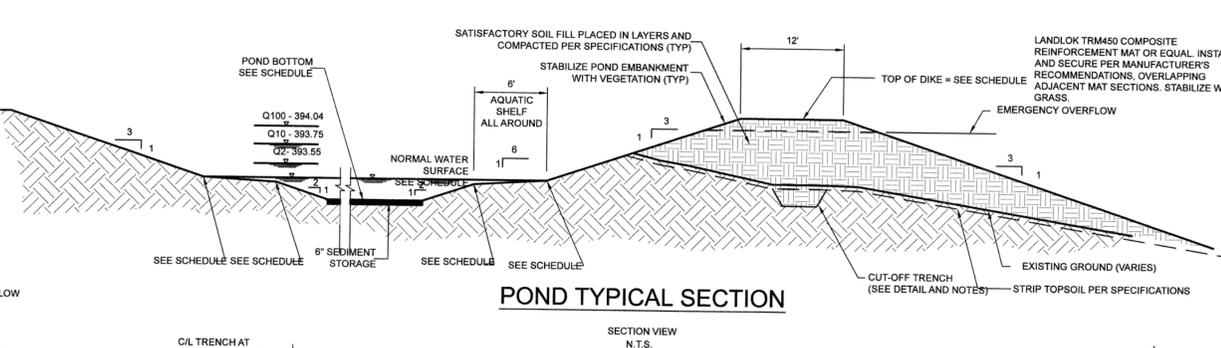
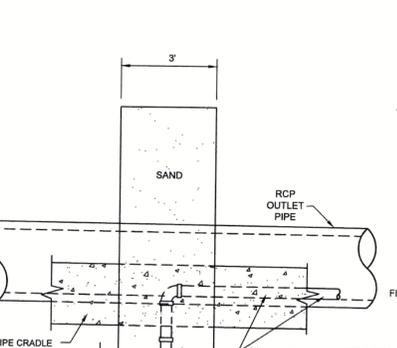
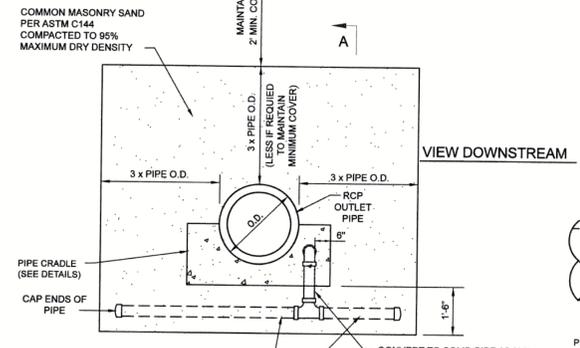
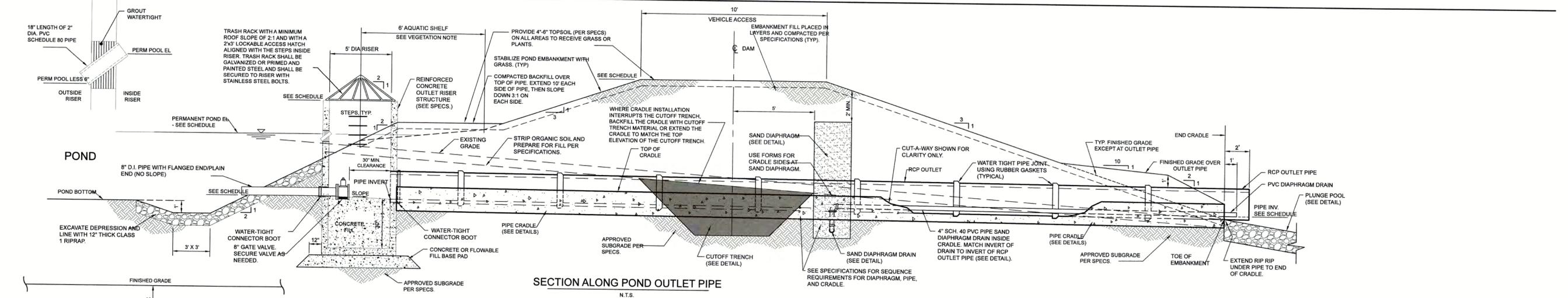


NO.	DATE	BY	REVISION DESCRIPTION
1	10/26/2020	Michael Crowley	Preliminary Construction Plans
2	11/23/2020	Michael Crowley	Revised per 1st review comments
3	11/23/2020	Michael Crowley	Revised per 2nd review comments
4	01/12/2021	Michael Crowley	Revised per 3rd review comments
5	02/12/2021	Michael Crowley	Issued for signature approval
6			Date Comment
7			Date Comment
8			Date Comment
NO.	DATE	BY	REVISION DESCRIPTION

Michael Crowley
Professional Engineer
Date: 2021.02.12
12344-05'00'

Wet Pond Details
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

Job No. JDF
Dwg No. C36



CONSTRUCTION SPECIFICATIONS
STORMWATER IMPOUNDMENT

GENERAL REQUIREMENTS
GENERAL SEQUENCE: AFTER SITE PREPARATION IS COMPLETE IN THE IMPOUNDMENT AREA, OBSERVE THE FOLLOWING GENERAL SEQUENCE OF CONSTRUCTION, UNLESS OTHERWISE APPROVED BY THE ENGINEER. REQUIREMENTS SHALL APPLY.

PRE-CONSTRUCTION COORDINATION
MEETING: SCHEDULE AND HOLD A PRE-CONSTRUCTION MEETING WITH THE ENGINEER AND OTHERS, SPECIFICALLY FOR THE STORMWATER IMPOUNDMENT WORK, PRIOR TO BEGINNING ANY WORK IN THE IMPOUNDMENT AREA (SEE NOTICE).

SUBMITTALS: SUBMIT THE FOLLOWING TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION:
1. PROPOSED CONSTRUCTION PLAN (SEE SEQUENCING REQUIREMENTS)
2. SPECS AND LITERATURE FOR ALL MANUFACTURED PRODUCTS
3. GRADATION ANALYSIS FOR DIAPHRAGM SAND
4. CONCRETE AND FLOWABLE FILL MIX ANALYSIS
5. PLANT TYPES AND QUANTITIES FOR THE VEGETATED SHELF

SITE PREPARATION
CLEARING, GRUBBING, TOPSOIL STRIPPING AND PROOFROLLING SUBGRADES SHALL BE PER PROJECT GRADING SPECIFICATIONS.

QUALITY CONTROL
QUALITY CONTROL REQUIREMENTS SHALL BE PER PROJECT GRADING SPECIFICATIONS.

CUT-OFF TRENCH
SEE THE DETAIL FOR CUT-OFF TRENCH.

FILL MATERIAL
GENERAL: EMBANKMENT FILL AND BACKFILL MATERIAL IN THE IMPOUNDMENT AREA SHALL BE STRUCTURAL FILL AS DEFINED IN THE PROJECT GRADING SPECIFICATIONS, EXCEPT AS OTHERWISE REQUIRED FOR SPECIFIC FEATURES (SUCH AS CUT-OFF TRENCH, OR TOPSOIL).
VARIATIONS: SOIL NOT MEETING THE ABOVE REQUIREMENTS MAY ONLY BE USED IF APPROVED BY BOTH THE DESIGN ENGINEER AND THE GEOTECHNICAL ENGINEER, AND ONLY IN THE LOCATIONS AND UNDER THE CONDITIONS SO APPROVED.

FILL PLACEMENT AND COMPACTION
GENERAL: PLACE AND COMPACT STRUCTURAL FILL WHEN THE SOIL'S MOISTURE CONTENT IS WITHIN THREE PERCENTAGE POINTS OF ITS OPTIMUM MOISTURE CONTENT.
EMBANKMENT FILL: SCARIFY ALL AREAS ON WHICH EMBANKMENT FILL IS TO BE PLACED. PLACE SOIL IN CONTINUOUS LAYERS NOT EXCEEDING 6 INCHES IN LOOSE THICKNESS, AND COMPACT THE SOIL USING A SHEEPSFOOT-TYPE ROLLER, TO AT LEAST 95% OF ITS MAXIMUM DRY DENSITY PRIOR TO PLACING ADDITIONAL LIFTS OF SOIL.
TRENCH BACKFILL AROUND OUTLET PIPE: WHERE SOIL IS PLACED ADJACENT TO PIPE SECTIONS, OR OVER PIPING HAVING LESS THAN 24 INCHES OF INSTALLED COVER, PLACE SOIL IN LAYERS NOT EXCEEDING 4 INCHES IN LOOSE THICKNESS, AND CAREFULLY COMPACT THE SOIL TO AT LEAST 95% OF ITS MAXIMUM DRY DENSITY USING MANUALLY DIRECTED COMPACTION EQUIPMENT, WITHOUT DISPLACING OR DAMAGING THE PIPE.
EMBANKMENT FILL ABOVE OUTLET PIPE: AFTER TRENCH BACKFILL IS SATISFACTORILY PLACED AND COMPACTED TO A HEIGHT OF 24 INCHES ABOVE THE OUTLET PIPE, FOLLOW PROCEDURES SPECIFIED FOR EMBANKMENT FILL FOR THE BALANCE OF FILL ABOVE THE PIPE.

SEQUENCING REQUIREMENTS
GENERAL SEQUENCE: AFTER SITE PREPARATION IS COMPLETE IN THE IMPOUNDMENT AREA, OBSERVE THE FOLLOWING GENERAL SEQUENCE OF CONSTRUCTION, UNLESS OTHERWISE APPROVED BY THE ENGINEER. REQUIREMENTS SHALL APPLY.

1. INSTALL THE CUT-OFF TRENCH
2. PLACE EMBANKMENT FILL UP TO ONE FOOT ABOVE THE SPRINGLINE OF THE OUTLET PIPE
3. EXCAVATE THE OUTLET PIPE TRENCH
4. EXCAVATE A TRENCH FOR THE LOWER PORTION OF THE SAND DIAPHRAGM, AND INSTALL THE LOWER PORTION OF SAND AND DRAINAGE PIPING
5. SET THE RISER AND OUTLET PIPE ON A TEMPORARY SUPPORT SYSTEM
6. INSTALL ANY DIAPHRAGM DRAINAGE PIPING LOCATED INSIDE THE CRADLE CROSS-SECTION
7. POUR THE BASE PAD UNDER THE RISER
8. POUR THE CRADLE UNDER THE OUTLET PIPE, USING FORMS TO DEFINE THE CRADLE EDGES ACROSS THE SAND DIAPHRAGM, MAINTAINING A CONSISTENT CRADLE WIDTH THROUGHOUT
9. ALLOW THE CRADLE TO CURE SUFFICIENTLY PRIOR TO COVERING
10. INSTALL FILL OVER THE CRADLE AND PIPE, EITHER BY BRINGING THE SAND DIAPHRAGM UP IN CONCURRENT LIFTS WITH THE FILL, OR BY EXCAVATING INTO THE INSTALLED FILL AND BACKFILLING WITH SAND
11. EXCAVATE AS NEEDED AND INSTALL THE LINER AND PROTECTIVE SOIL LAYER
12. COMPLETE EMBANKMENT FILL, GROUND COVER, AND REMAINING FEATURES.

VARIATION: IN CERTAIN CASES THE ENGINEER MAY APPROVE THE OUTLET PIPE TO BE INSTALLED AFTER THE EMBANKMENT IS CONSTRUCTED. IF THE EMBANKMENT IS EXCAVATED FOR THIS PURPOSE, CUT THE TRENCH SIDES BACK TO 3:1 (H/V) OR FLATTER SLOPES, AND RE-CONSTRUCT THE AREA USING THE PROCEDURES AND EQUIPMENT SPECIFIED FOR EMBANKMENT FILL, BENCHING EACH SUCCESSIVE LIFT OF FILL INTO THE EXCAVATED SIDE SLOPES.

TRENCH BACKFILL MATERIAL
SOIL MATERIAL USED TO BACKFILL PIPES OR STRUCTURES SHALL MEET THE REQUIREMENTS FOR STRUCTURAL FILL, OR IF APPROVED BY THE ENGINEER, FLOWABLE FILL. WHERE EXCAVATION INTERRUPTS THE INSTALLED CUT-OFF TRENCH, THE TOP OF THE PIPE CRADLE SHALL BE EXTENDED VERTICALLY TO AT LEAST THE TOP OF THE CUT-OFF TRENCH.

WATER CONTROL DURING CONSTRUCTION
PROVIDE, CONSTRUCT AND MAINTAIN ALL TEMPORARY DEVICES, EQUIPMENT, AND OTHER MEASURES AS NEEDED FOR WATER CONTROL DURING CONSTRUCTION. REMOVE ALL SUCH MEASURES AFTER THEY HAVE FULFILLED THEIR PURPOSE, AND BRING ALL AFFECTED AREAS TO FINAL GRADE AND CONDITION.

TOPSOIL
TOPSOIL SHALL BE CLAYEY SILTY, OR SANDY SOIL WITH A PH RANGE BETWEEN 5.5 TO 7.0, HAVING AT LEAST 5% ORGANIC CONTENT, FREE OF STONES LARGER THAN ONE INCH IN ANY DIMENSION, CONTAINING NO NOXIOUS CHEMICALS OR OTHER DELETERIOUS MATERIALS, AND CAPABLE OF SUPPORTING VIGOROUS PLANT GROWTH.

AQUATIC SHELF
THE CONTRACTOR SHALL PROVIDE A LANDSCAPE PLAN THAT HAS BEEN PREPARED BY A QUALIFIED DESIGN PROFESSIONAL LICENSED IN NORTH CAROLINA FOR THE PLANTINGS IN THE AQUATIC SHELF. THE LANDSCAPE PLAN SHOULD PROVIDE SPECIFICATIONS FOR THE VEGETATION SPECIES, INSTALLATION, AND THE POST-INSTALLATION CARE. THE PLAN SHALL COVER THE DAM, EMBANKMENT SLOPES AND THE VEGETATED SHELF.

OUTLET STRUCTURE AND PIPING
THE OUTLET RISER STRUCTURE SHALL CONSIST OF PRECAST CONCRETE BASE AND RISER SECTIONS OF THE TYPE AND DIMENSIONS SHOWN. ROUND RISER SECTIONS SHALL CONFORM TO ASTM C478 SQUARE OR RECTANGULAR SECTIONS SHALL BE SOLID-WALL CATCH BASIN TYPE STRUCTURES, AND APPROVED FOR USE BY NCDOT. ALL RISER JOINTS SHALL BE SEALED WATER-TIGHT USING FLEXIBLE BUTYL RUBBER JOINT MATERIAL, RUBBER GASKETS, OR OTHER SUITABLE MATERIAL. ALL PIPE CONNECTIONS TO THE RISER SHALL BE MADE WITH A WATER-TIGHT FLEXIBLE CONNECTOR BOOT PER ASTM C923.

OUTLET PIPING
OUTLET PIPING SHALL BE STEEL-REINFORCED ROUND CONCRETE PIPE SECTIONS CONFORMING TO ASTM C78, WITH BELL AND SPIGOT JOINTS USING RUBBER GASKETS. THE JOINT AND GASKET ASSEMBLY SHALL CONFORM TO ASTM C443. PLACE PIPE SECTIONS WITH BELL ENDS FACING UPSTREAM.

OTHER PIPING AND APPURTENANCES
DUCTILE IRON PIPE SHALL CONFORM TO AWWA C151, PRESSURE CLASS 350. GATE VALVES SHALL CONFORM TO AWWA C509, WITH MECHANICAL JOINT ENDS.

CONCRETE
CONCRETE WORK SHALL CONFORM TO PROJECT CONCRETE SPECIFICATIONS.

FLOWABLE FILL
FLOWABLE FILL SHALL CONSIST OF A MIXTURE OF PORTLAND CEMENT, AGGREGATE NOT GREATER THAN 3/8 INCH DIAMETER, WATER, AND OTHER APPROVED COMPONENTS, WITH A MINIMUM PH OF 4.0, AND A 28-DAY COMPRESSIVE STRENGTH OF AT LEAST 150 PSI. THE MIXTURE SHALL BE SUFFICIENTLY FLOWABLE TO BE SELF-LEVELING, FILLING ALL VOIDS UNDER THE PIPE AND PIPE HAUNCHES WITHOUT REQUIRING VIBRATION.

OUTLET PIPE CRADLE
SEE THE DETAIL FOR PIPE CRADLE.

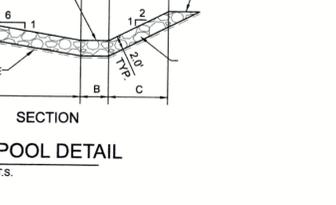
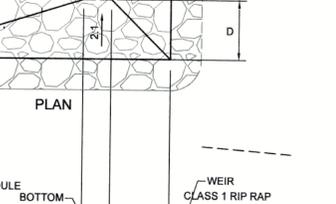
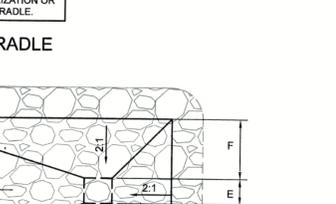
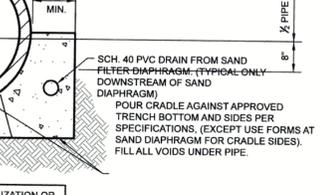
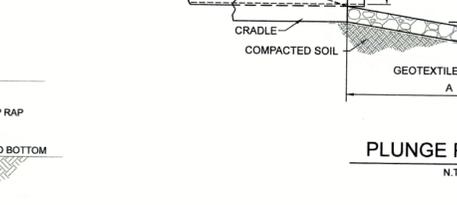
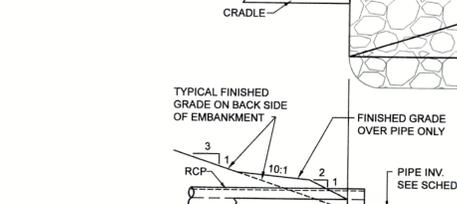
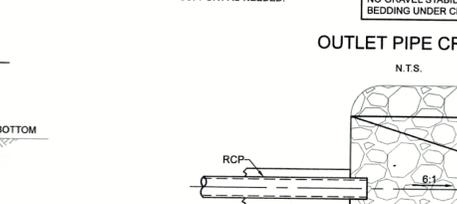
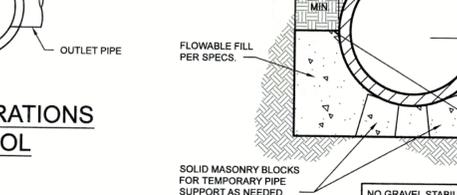
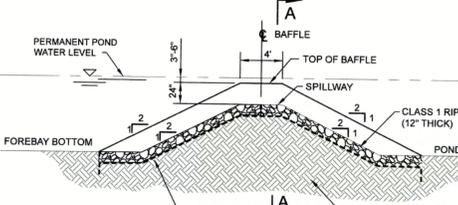
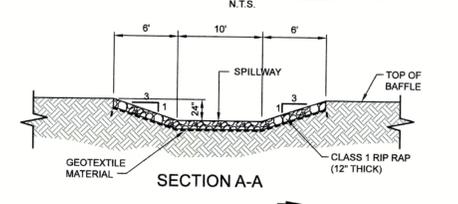
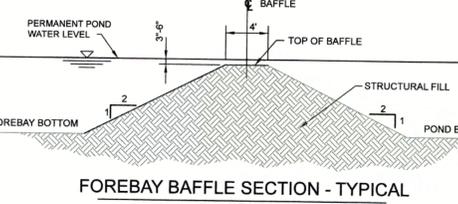
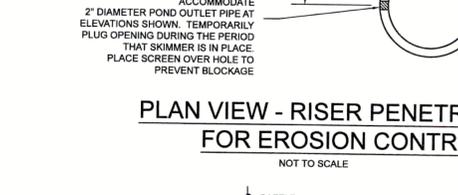
FILTER DIAPHRAGM AND DRAIN
SEE THE DETAIL FOR FILTER DIAPHRAGM.

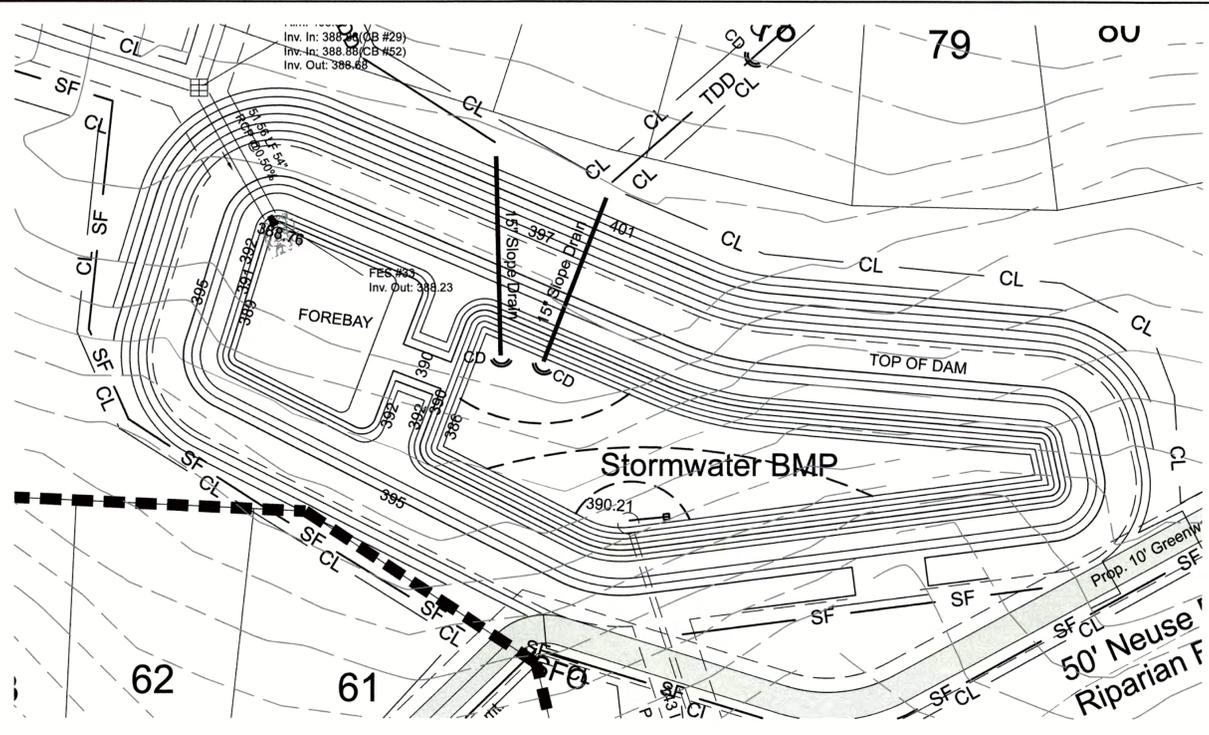
GEOTEXTILE
UNLESS OTHERWISE NOTED, GEOTEXTILE MATERIAL SHALL BE A NON-WOVEN NEEDLE-PUNCHED MATERIAL SUCH AS MIRAFI 140N OR APPROVED ALTERNATE. INSTALL GEOTEXTILE ON ANY SUBGRADE AREAS DESIGNATED TO RECEIVE RIPRAP.

ROCK RIPRAP
ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION, FOR THE TYPE SPECIFIED. ALL RIP RAP AREAS AND DEVICES SHALL HAVE A GEOTEXTILE UNDERLAYER.

PLANTINGS FOR THE VEGETATED SHELF
THE VEGETATED SHELF SHALL BE PLANTED WITH A MINIMUM OF THREE DIVERSE SPECIES OF HERBACEOUS, NATIVE VEGETATION AT A MIN OF 50 PLANTS PER 200 SQUARE FEET OF SHELF AREA. PLANT LIST CAN BE FOUND IN TABLE 3 OF THE NCDOT BMP MANUAL (MDC GUIDELINES).

FINAL SURFACE STABILIZATION
STABILIZE ALL SURFACES OF THE EMBANKMENT, SPILLWAY, SLOPES, SPILL AND BORROW AREAS THAT ARE NOT COVERED BY OTHER SPECIFIED MATERIALS WITH GRASS IN ACCORDANCE WITH PROJECT SPECIFICATIONS.





Inv. In: 388.84 (CB #29)
 Inv. In: 388.86 (CB #52)
 Inv. Out: 388.88



VEGETATION NOTES:

THE FOLLOWING CRITERIA APPLY TO VEGETATION IN AND AROUND THE WET POND:
 (A) THE DAM STRUCTURE, INCLUDING FRONT AND BACK EMBANKMENT SLOPES, OF THE POND SHALL BE VEGETATED WITH NON-CLUMPING TURF GRASS. TREES AND WOODY SHRUBS SHALL NOT BE ALLOWED, AND
 (B) THE VEGETATED SHELF SHALL BE PLANTED WITH A MINIMUM OF THREE DIVERSE SPECIES OF HERBACEOUS, NATIVE VEGETATION AT A MINIMUM DENSITY OF 50 PLANTS PER 200 SQUARE FEET OF SHELF AREA.

THE DAM AND THE EMBANKMENT SLOPES SHOULD HAVE TURF GRASS THAT PROVIDES STABILITY AND ENHANCES ACCESS TO THE FACILITY FOR MAINTENANCE. DEQ RECOMMENDS PERENNIAL GRASSES SUCH AS HYBRID BERMUDA OR CENTPEDE IN THE COASTAL PLAIN AND PIEDMONT, AND COOL SEASON TURF GRASS SUCH AS FESCUE AND BLUEGRASS IN THE MOUNTAINS. WEEPING LOVE GRASS IS NOT ALLOWED BECAUSE IT DOES NOT PROVIDE LONG-TERM SLOPE STABILIZATION.

TREES AND WOODY SHRUBS SHALL NOT BE PLANTED ON THE DAM OR EMBANKMENT SLOPES AND ANY VOLUNTEERS SHOULD BE REMOVED AS PART OF REGULAR MAINTENANCE ACTIVITIES. HOWEVER, TREES AND SHRUBS MAY BE PLANTED OUTSIDE OF THE EMBANKMENT SLOPES AND CAN SERVE TO SHADE THE WET POND, ALONG ITS SOUTH, EAST AND WEST SIDES. SHADING REDUCES HEATING OF THE WATER AND HELPS TO REDUCE ALGAL BLOOMS AND THE POTENTIAL FOR ANAEROBIC CONDITIONS.

THE PLANTS ON THE VEGETATED SHELF ARE IMPORTANT TO DISCOURAGE WATERFOWL (A SOURCE OF NUTRIENTS AND BACTERIA DIRECTLY TO THE WET POND) AND PROTECT THE SHORELINE FROM EROSION. VEGETATED SHELVES ALSO ENHANCE SAFETY BY DISCOURAGING CHILDREN FROM ENTERING THE POND. THE PLANT LIST NOTES PLANTS FOR VEGETATED SHELVES THAT WILL REMAIN SUBMERGED AND PARTIALLY SUBMERGED BETWEEN STORM EVENTS. IF THE VEGETATED SHELF WILL BE ABOVE THE PERMANENT POOL AND/OR THE PERMANENT POOL DROPS BETWEEN STORM EVENTS DUE TO INFILTRATION, PLANTS THAT ARE ADAPTED TO DRIER CONDITIONS SHOULD BE SPECIFIED. WETLAND SEED MIXES SHALL NOT BE USED.

Botanical Name	Common Name
<i>Asclepias incarnata</i>	Swamp Milkweed
<i>Carex lasiocarpa</i>	Cull sedge
<i>Chelone glabra</i>	White Turtlehead
<i>Eupatoriadelphus dubius</i>	Dwarf Joe Pye Weed
<i>Eupatoriadelphus fistulosus</i>	Joe Pye Weed
<i>Eupatoriadelphus maculatus</i>	Spotted tumpetweed
<i>Hibiscus coccineus</i>	Scarlet rose mallow
<i>Hibiscus laevis</i>	Halberdeaf rosemallow
<i>Kosteletzkya virginica</i>	Seashore Mallow
<i>Lobelia cardinalis</i>	Cardinal flower
<i>Lobelia elongata</i>	Longleaf lobelia
<i>Lobelia siphilitica</i>	Great blue Lobelia
<i>Rhynchospora colorata</i>	Starush whitetop
<i>Saccharum baldwinii</i>	Narrow plumegrass



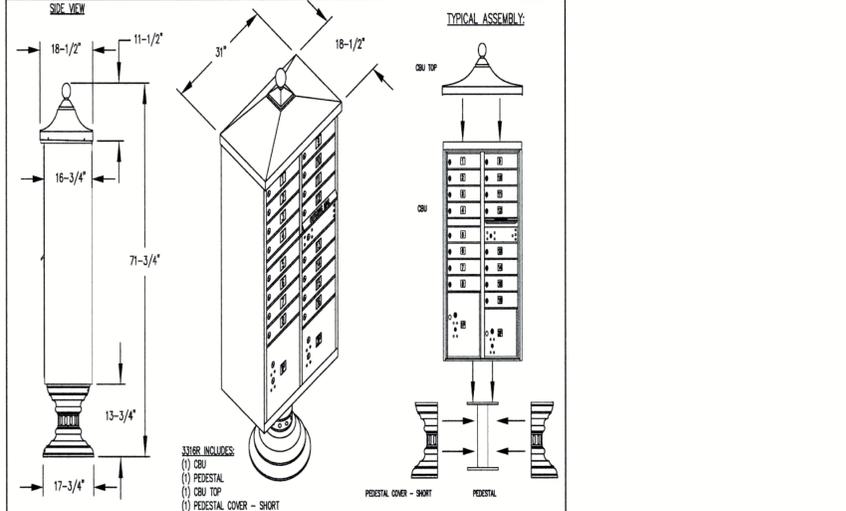
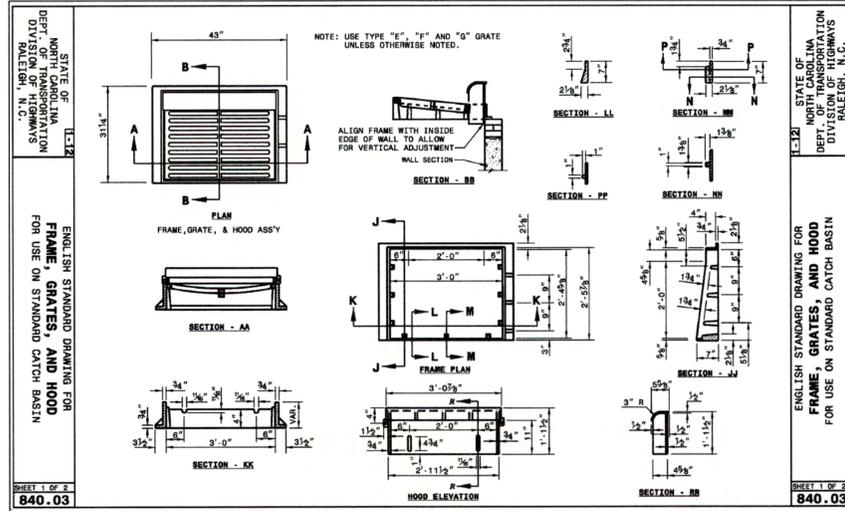
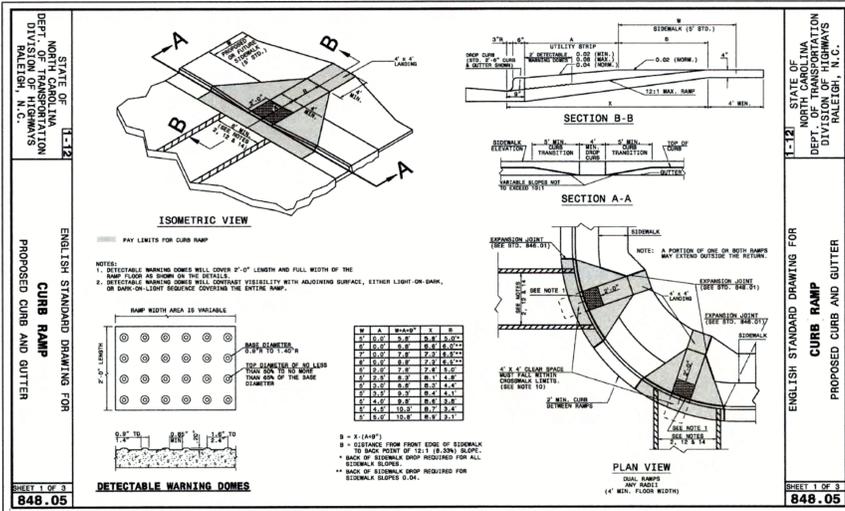
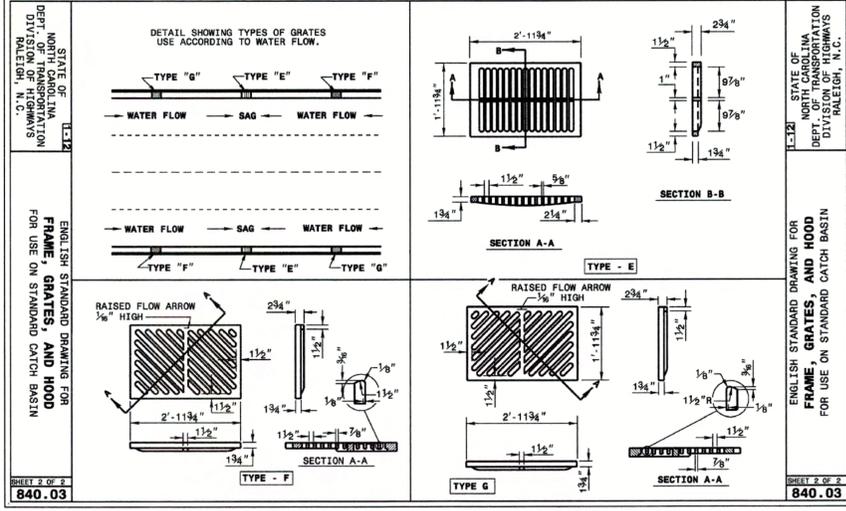
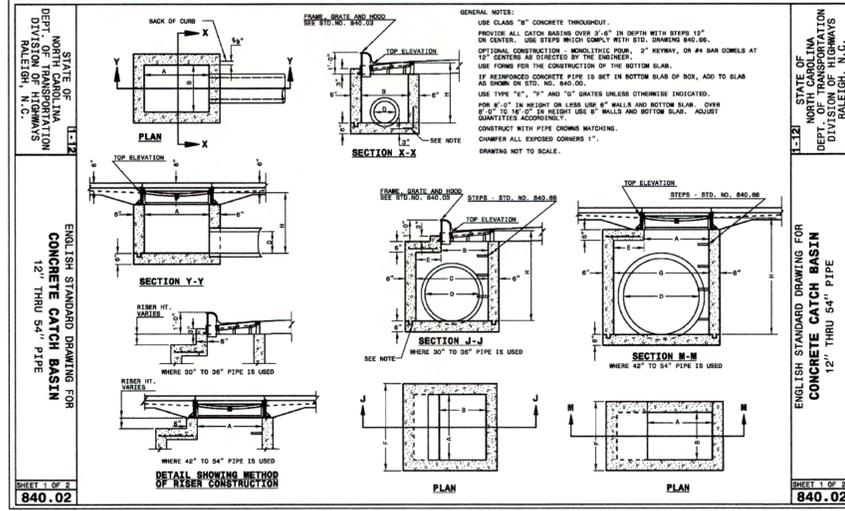
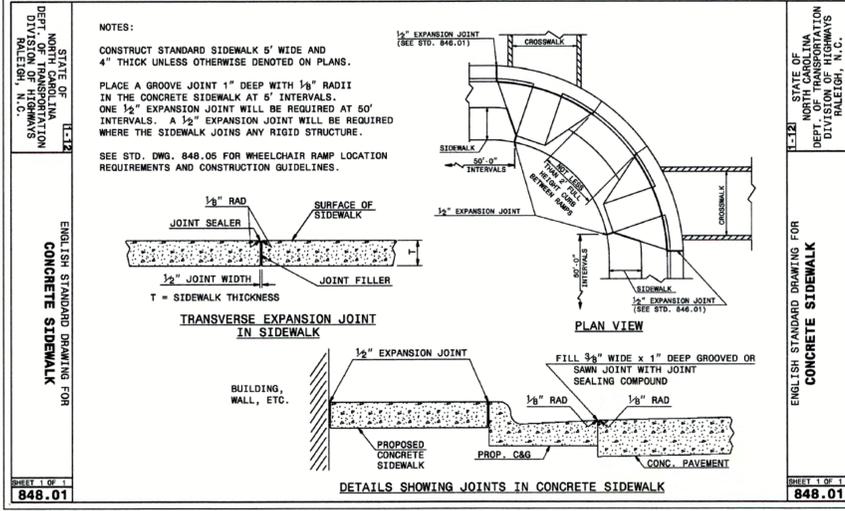
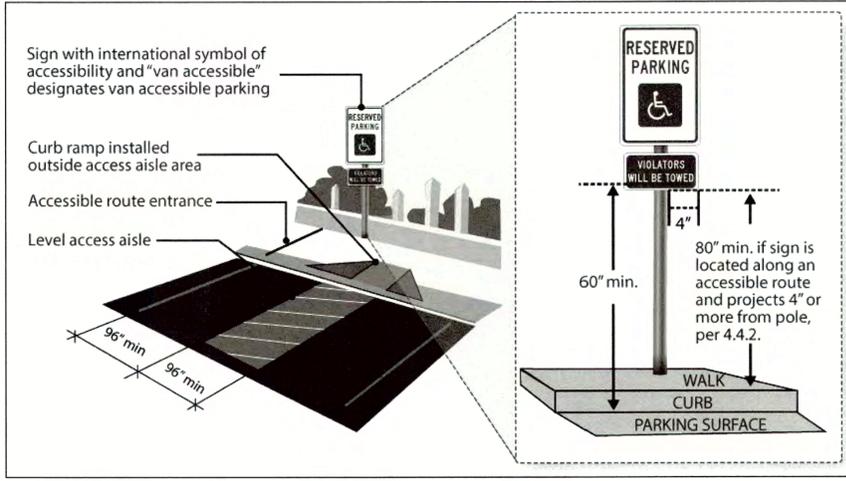
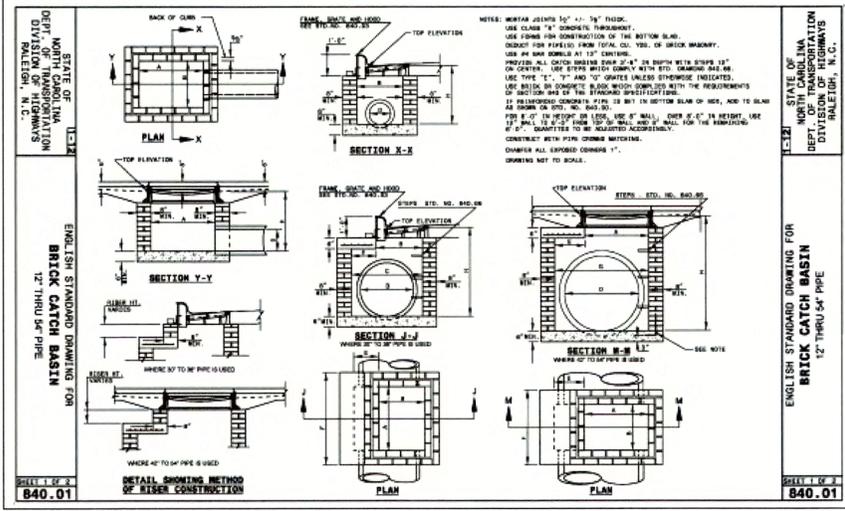
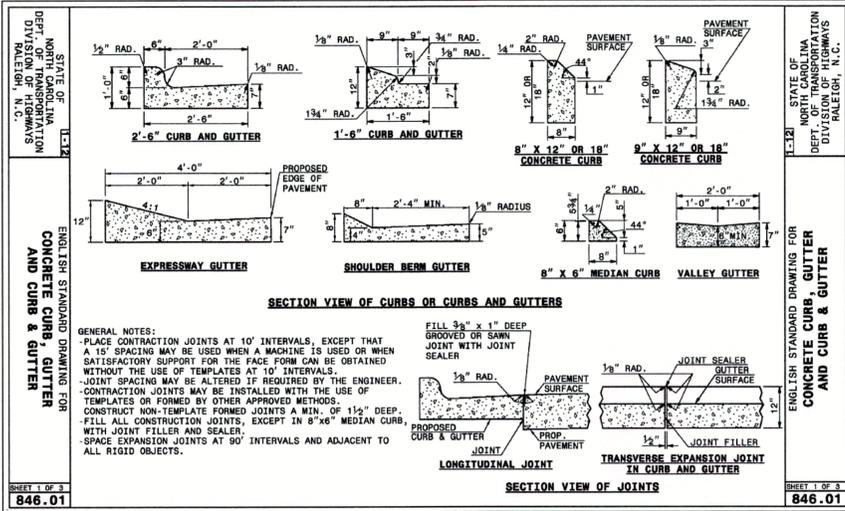
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 45225 Windy Hill, Cary, North Carolina 27513
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NO	DATE	REVISION DESCRIPTION	BY
1	05/08/2020	Preliminary Construction Plans	MAC
2	10/23/2020	Revised per 1st review comments	MAC
3	11/25/2020	Town, Raleigh Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/12/2021	Issued for signature approval	MAC
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Michael Crowley
 Digitally signed by Michael Crowley
 Date: 2021.02.12 11:31:02 -0500

Wet Pond Details
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. **C37**



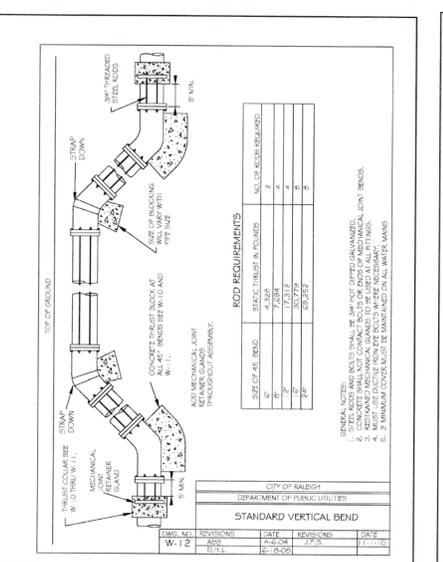
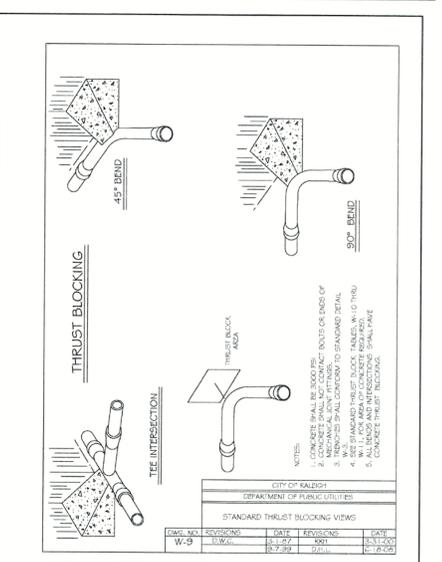
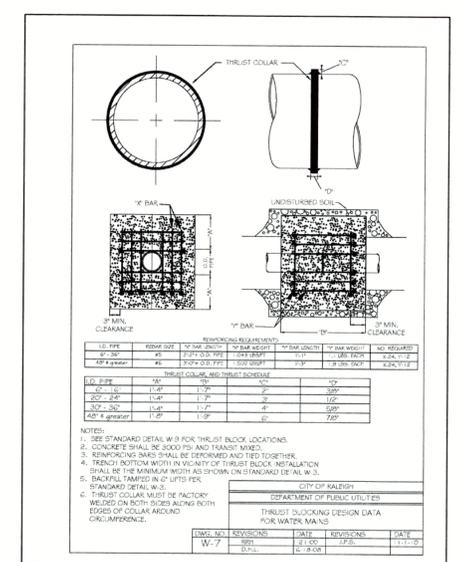
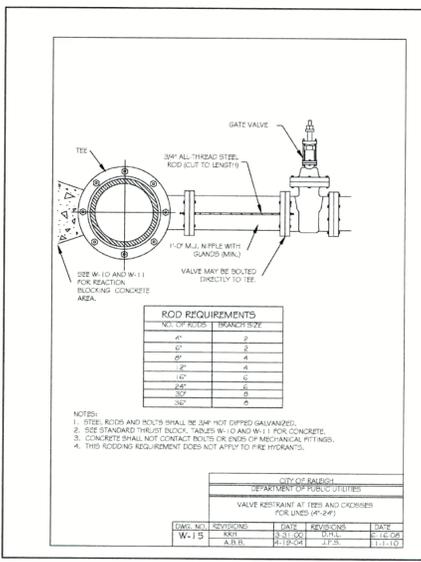
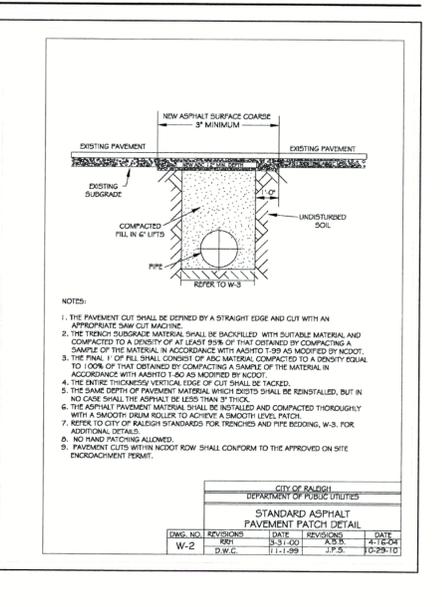
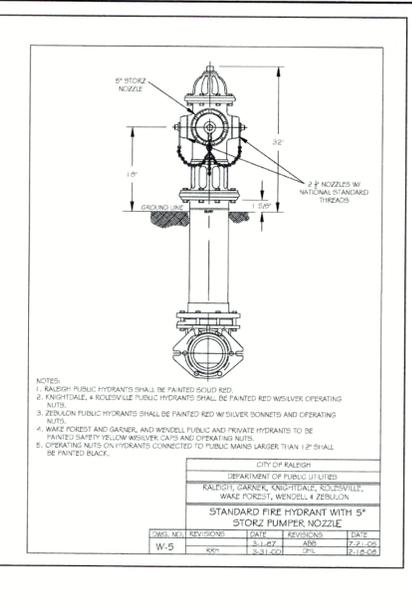
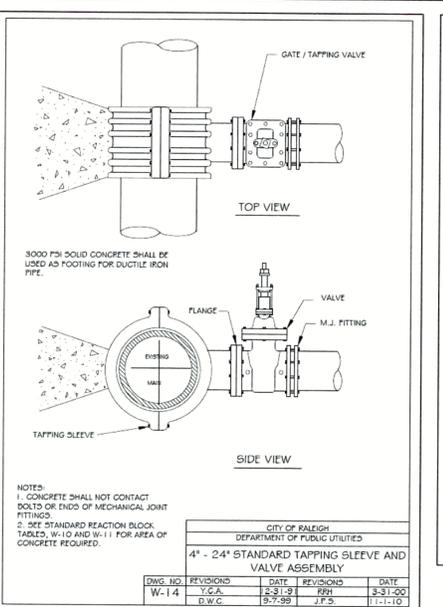
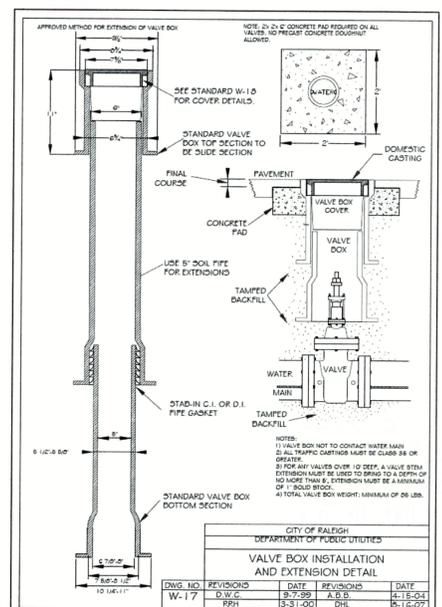
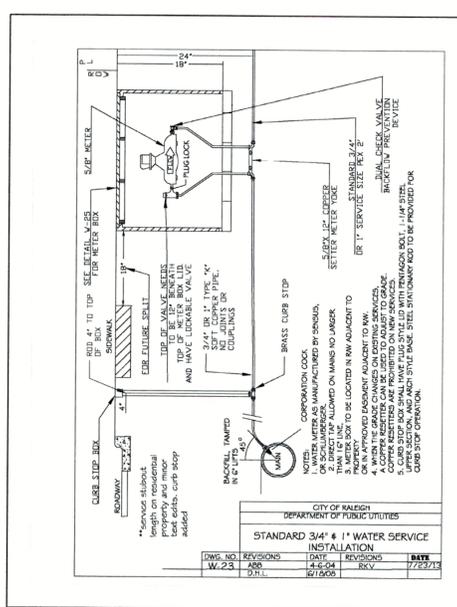
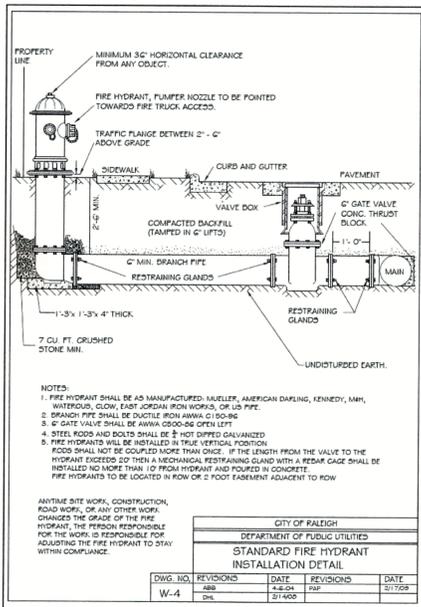
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NO.	DATE	REVISION DESCRIPTION	BY
1	05/09/2023	Preliminary Construction Plans	MAC
2	10/25/2023	Revised Per File Review Comments	MAC
3	11/25/2023	Town Design Comments	MAC
4	01/17/2024	Town Comments	MAC
5	07/17/2024	Revised for signature approval	By
6		Comment	By
7		Date	By
8		Comment	By



Standard Details
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. D1



REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200 P.S.I.

PIPE SIZE (IN)	PIPE WALL THICKNESS (IN)	PIPE CLOSURE (IN)							
1 1/4"	1.108	1	1	1	1	1	1	1	1
2"	1.754	5	9	11	3	3	5	10	2
2 1/2"	2.207	9	16	22	5	5	9	16	4
3"	2.592	15	25	35	9	9	16	25	7
4"	3.282	24	38	52	14	14	25	38	11
5"	3.828	33	52	70	19	19	35	52	15
6"	4.320	42	66	90	25	25	45	66	20
8"	5.280	60	90	120	35	35	60	90	28
10"	6.480	84	120	160	48	48	84	120	38
12"	7.920	108	150	200	63	63	108	150	50
14"	9.540	132	180	240	81	81	132	180	63
16"	11.280	156	210	280	102	102	156	210	78
18"	13.140	180	240	320	126	126	180	240	96
20"	15.120	204	270	360	156	156	204	270	114
24"	19.440	252	324	432	189	189	252	324	144
30"	25.200	324	396	504	252	252	324	396	180
36"	31.500	378	450	576	306	306	378	450	216
42"	38.160	432	504	648	351	351	432	504	252
48"	45.180	486	558	720	396	396	486	558	288
54"	52.560	540	612	792	441	441	540	612	324
60"	60.300	594	666	864	486	486	594	666	360
72"	76.680	702	792	1008	576	576	702	792	432
84"	93.720	810	918	1152	666	666	810	918	504
96"	111.420	918	1038	1302	756	756	918	1038	576
108"	129.720	1026	1158	1452	846	846	1026	1158	648
120"	148.620	1134	1278	1602	936	936	1134	1278	720
144"	197.640	1374	1566	1944	1134	1134	1374	1566	864
168"	246.720	1620	1854	2286	1332	1332	1620	1854	1008
192"	295.800	1872	2142	2628	1530	1530	1872	2142	1152
216"	344.880	2124	2430	2970	1728	1728	2124	2430	1300
240"	393.960	2376	2718	3312	1926	1926	2376	2718	1440
264"	443.040	2628	3006	3654	2124	2124	2628	3006	1584
288"	492.120	2880	3294	3996	2322	2322	2880	3294	1728
312"	541.200	3132	3582	4338	2520	2520	3132	3582	1872
336"	590.280	3384	3870	4680	2718	2718	3384	3870	2016
360"	639.360	3636	4158	5022	2916	2916	3636	4158	2160
384"	688.440	3888	4446	5364	3114	3114	3888	4446	2304
408"	737.520	4140	4734	5706	3312	3312	4140	4734	2448
432"	786.600	4392	5022	6048	3510	3510	4392	5022	2592
456"	835.680	4644	5310	6390	3708	3708	4644	5310	2736
480"	884.760	4896	5598	6732	3906	3906	4896	5598	2880
504"	933.840	5148	5886	7074	4104	4104	5148	5886	3024
528"	982.920	5400	6174	7416	4302	4302	5400	6174	3168
552"	1032.000	5652	6462	7758	4500	4500	5652	6462	3312
576"	1081.080	5904	6750	8100	4698	4698	5904	6750	3456
600"	1130.160	6156	7038	8442	4896	4896	6156	7038	3600
624"	1179.240	6408	7326	8784	5094	5094	6408	7326	3744
648"	1228.320	6660	7614	9126	5292	5292	6660	7614	3888
672"	1277.400	6912	7902	9468	5490	5490	6912	7902	4032
696"	1326.480	7164	8190	9810	5688	5688	7164	8190	4176
720"	1375.560	7416	8478	10152	5886	5886	7416	8478	4320
744"	1424.640	7668	8766	10494	6084	6084	7668	8766	4464
768"	1473.720	7920	9054	10836	6282	6282	7920	9054	4608
792"	1522.800	8172	9342	11178	6480	6480	8172	9342	4752
816"	1571.880	8424	9630	11520	6678	6678	8424	9630	4896
840"	1620.960	8676	9918	11862	6876	6876	8676	9918	5040
864"	1670.040	8928	10206	12204	7074	7074	8928	10206	5184
888"	1719.120	9180	10494	12546	7272	7272	9180	10494	5328
912"	1768.200	9432	10782	12888	7470	7470	9432	10782	5472
936"	1817.280	9684	11070	13230	7668	7668	9684	11070	5616
960"	1866.360	9936	11358	13572	7866	7866	9936	11358	5760
984"	1915.440	10188	11646	13914	8064	8064	10188	11646	5904
1008"	1964.520	10440	11934	14256	8262	8262	10440	11934	6048
1032"	2013.600	10692	12222	14598	8460	8460	10692	12222	6192
1056"	2062.680	10944	12510	14940	8658	8658	10944	12510	6336
1080"	2111.760	11196	12798	15282	8856	8856	11196	12798	6480
1104"	2160.840	11448	13086	15624	9054	9054	11448	13086	6624
1128"	2209.920	11700	13374	15966	9252	9252	11700	13374	6768
1152"	2259.000	11952	13662	16308	9450	9450	11952	13662	6912
1176"	2308.080	12204	13950	16650	9648	9648	12204	13950	7056
1200"	2357.160	12456	14238	16992	9846	9846	12456	14238	7200
1224"	2406.240	12708	14526	17334	10044	10044	12708	14526	7344
1248"	2455.320	12960	14814	17676	10242	10242	12960	14814	7488
1272"	2504.400	13212	15102	18018	10440	10440	13212	15102	7632
1296"	2553.480	13464	15390	18360	10638	10638	13464	15390	7776
1320"	2602.560	13716	15678	18702	10836	10836	13716	15678	7920
1344"	2651.640	13968	15966	19044	11034	11034	13968	15966	8064
1368"	2700.720	14220	16254	19386	11232	11232	14220	16254	8208
1392"	2749.800	14472	16542	19728	11430	11430	14472	16542	8352
1416"	2798.880	14724	16830	20070	11628	11628	14724	16830	8496
1440"	2847.960	14976	17118	20412	11826	11826	14976	17118	8640
1464"	2897.040	15228	17406	20754	12024	12024	15228	17406	8784
1488"	2946.120	15480	17694	21096	12222	12222	15480	17694	8928
1512"	2995.200	15732	17982	21438	12420	12420	15732	17982	9072
1536"	3044.280	15984	18270	21780	12618	12618	15984	18270	9216
1560"	3093.360	16236	18558	22122	12816	12816	16236	18558	9360
1584"	3142.440	16488	18846	22464	13014	13014	16488	18846	9504
1608									

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT
Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes		
Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	- 7 days for slopes greater than 50' in length and with slopes steeper than 4:1 - 7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones - 10 days for Falls Lake Watershed - 10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	- 7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones - 10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
<ul style="list-style-type: none"> Temporary grass seed covered with straw or other mulches and tackifiers Hydroseeding Roller erosion control products with or without temporary grass seed Appropriately applied straw or other mulch Plastic sheeting 	<ul style="list-style-type: none"> Permanent grass seed covered with straw or other mulches and tackifiers Geotextile fabrics such as permanent soil reinforcement matting Hydroseeding Shrubs or other permanent plantings covered with mulch Uniform and evenly distributed ground cover sufficient to restrain erosion Structural methods such as concrete, asphalt or retaining walls Roller erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

- Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
- Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
- Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
- Provide ponding area for containment of treated stormwater before discharging offsite.
- Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

- EQUIPMENT AND VEHICLE MAINTENANCE**
- Maintain vehicles and equipment to prevent discharge of fluids.
 - Provide drip pans under any stored equipment.
 - Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
 - Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
 - Remove leaking vehicles and construction equipment from service until the problem has been corrected.
 - Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

- LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE**
- Never bury or burn waste. Place litter and debris in approved waste containers.
 - Provide a sufficient number and size of waste containers (e.g. dumpster, trash receptacle) on site to contain construction and domestic wastes.
 - Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
 - Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
 - Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
 - Anchor all lightweight items in waste containers during times of high winds.
 - Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
 - Dispose waste off-site at an approved disposal facility.
 - On business days, clean up and dispose of waste in designated waste containers.

- PAINT AND OTHER LIQUID WASTE**
- Do not dump paint and other liquid waste into storm drains, streams or wetlands.
 - Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
 - Contain liquid wastes in a controlled area.
 - Containment must be labeled, sized and placed appropriately for the needs of site.
 - Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

- PORTABLE TOILETS**
- Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
 - Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
 - Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

- EARTHEN STOCKPILE MANAGEMENT**
- Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
 - Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
 - Provide stable stone access point when feasible.
 - Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.



NCG01 GROUND STABILIZATION AND MATERIALS HANDLING EFFECTIVE: 04/01/19



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C-2-151

NO.	DATE	REVISION DESCRIPTION	BY
1	05/08/2020	Preliminary Construction Plans	MAC
2	10/03/2020	Reviewed per 1st review comments	MAC
3	11/25/2020	Town, Raleigh Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/12/2021	Issued for signature approval	By
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Digitally signed by Michael A. Crowley
Date: 2021.02.12 11:43:10 -08'00'

NCG01 Requirements
Preserve at Jones Dairy, South
Preserve at Jones Dairy, LLC
Rolesville, Wake County, North Carolina

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION
Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual rain gauge information is available, record the cumulative rain measurement for those unattended days (note this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&S Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outlets (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outlets inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the outlet, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division/Regional Office per Part III, Section C, Item 2(f) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&S measures, cleaning and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART II, SECTION 6, ITEM (4) DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

- The E&S plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&S plan authority has approved these items.
- The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item 2)(c) and (d) of this permit.
- Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems.
- Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in item (c) above.
- Velocity dissipation devices such as check dams, sediment traps, and riprap are providing devices, and
- Sediment removed from the dewatering treatment devices described in item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING
1. E&S Plan Documentation
The approved E&S plan as well as any approved deviation shall be kept on the site. The approved E&S plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&S plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&S measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&S plan.	Initial and date each E&S measure on a copy of the approved E&S plan or complete, date and sign an inspection report that lists each E&S measure shown on the approved E&S plan. This documentation is required upon the initial installation of the E&S measures or if the E&S measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&S plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&S plan.	Initial and date a copy of the approved E&S plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&S measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&S measures.	Initial and date a copy of the approved E&S plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site
In addition to the E&S plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

- This General Permit as well as the Certificate of Coverage, after it is received.
- Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years
All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING
1. Occurrences that Must be Reported
Permittees shall report the following occurrences:

- Visible sediment deposition in a stream or wetland.
- Oil spills if:
 - They are 25 gallons or more,
 - They are less than 25 gallons but cannot be cleaned up within 24 hours,
 - They cause sheen on surface waters (regardless of volume), or
 - They are within 100 feet of surface waters (regardless of volume).
- Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.
- Anticipated bypasses and unanticipated bypasses.
- Noncompliance with the conditions of this permit that may endanger health or the environment.

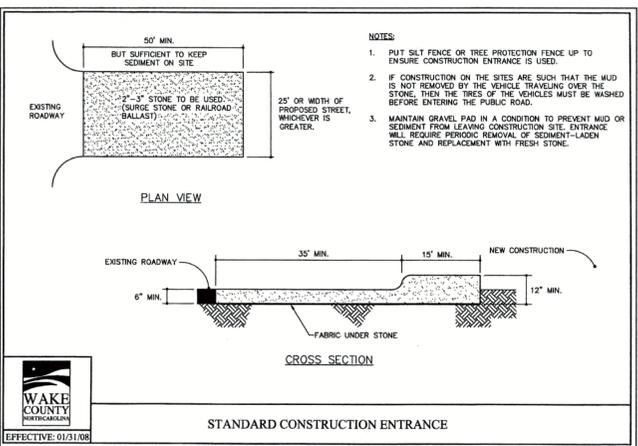
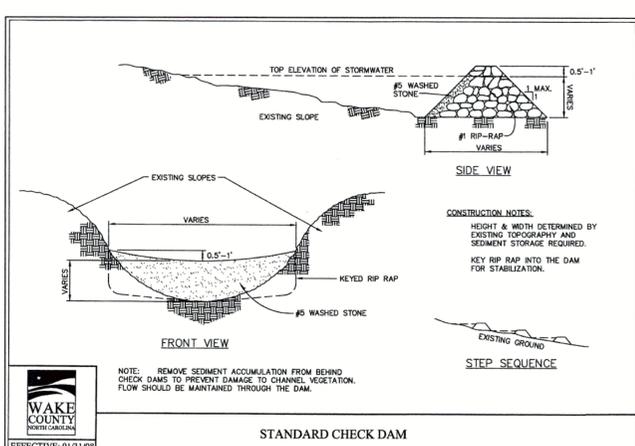
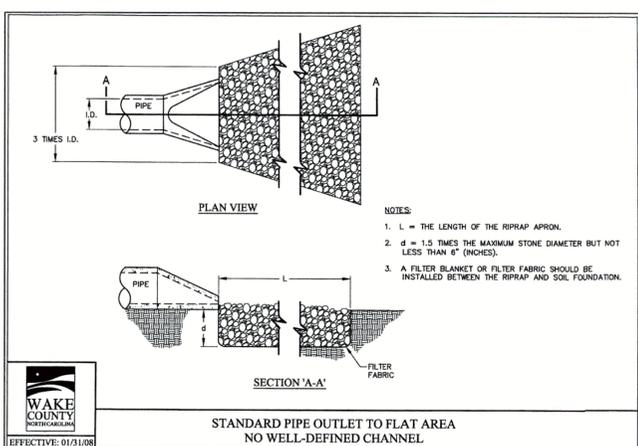
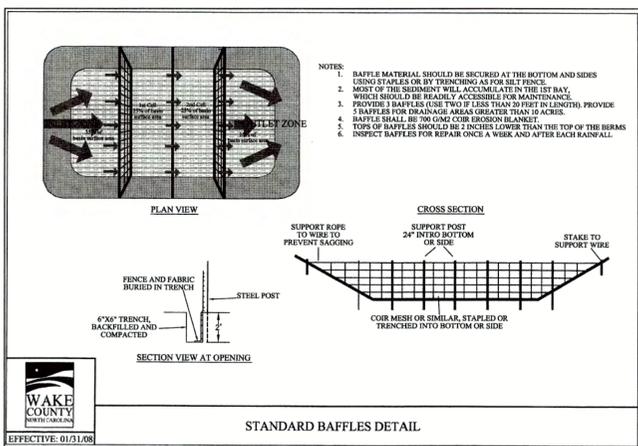
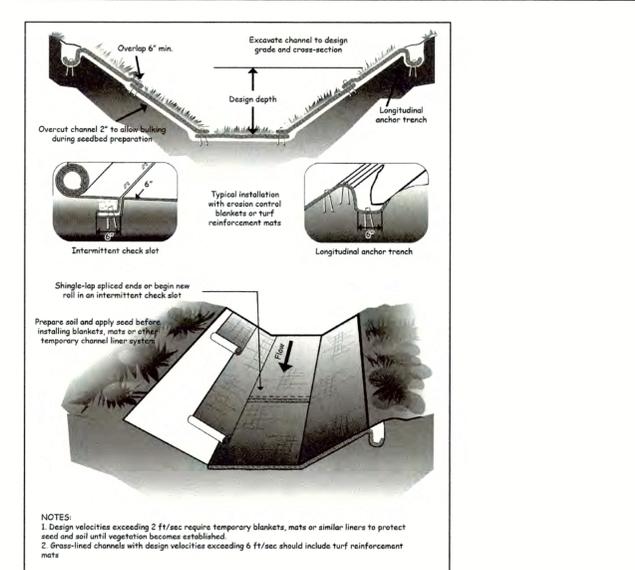
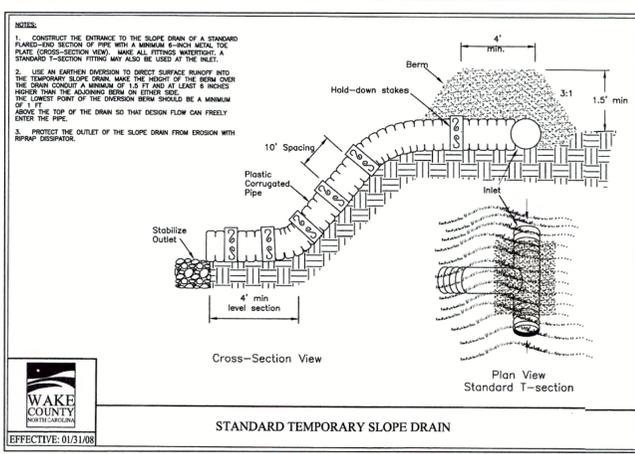
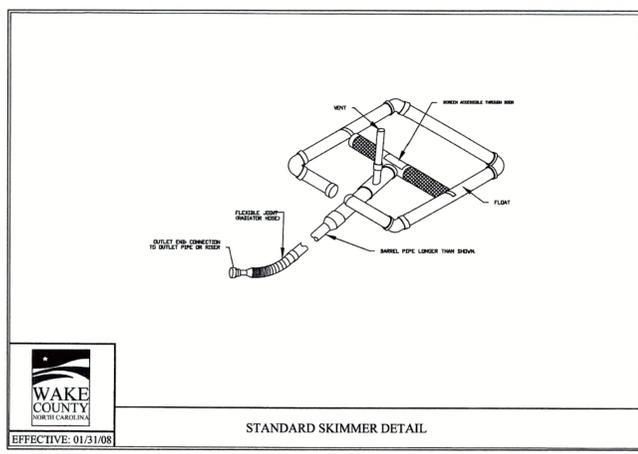
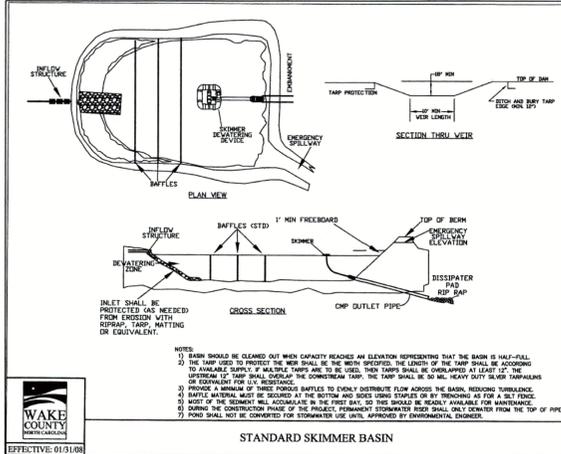
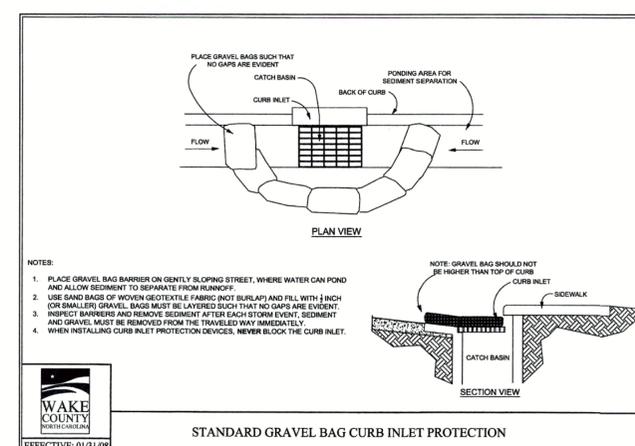
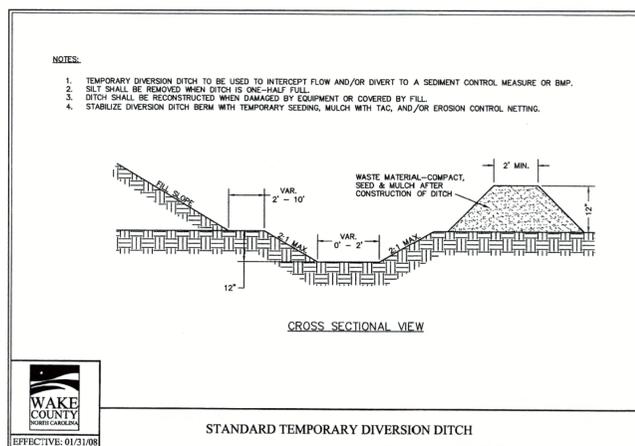
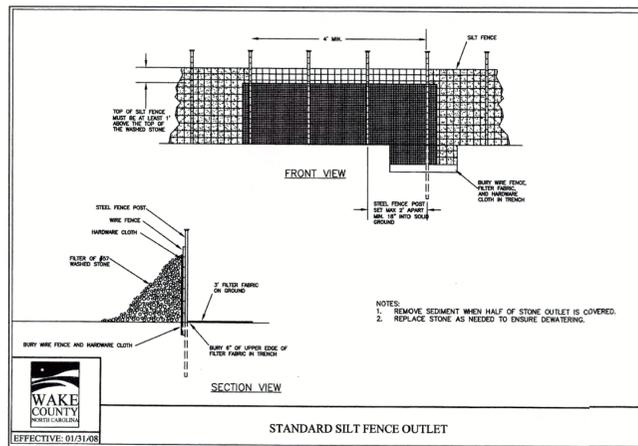
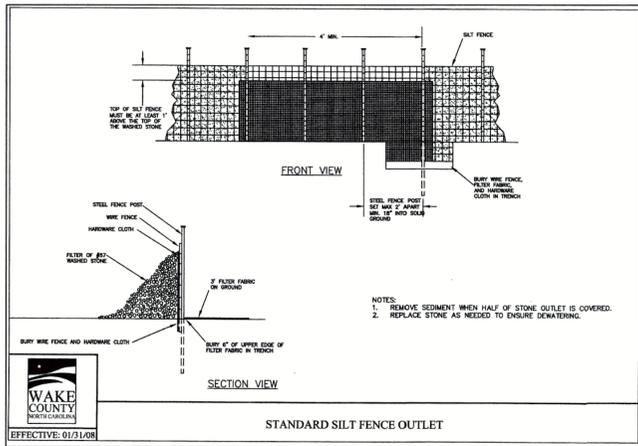
2. Reporting Timeframes and Other Requirements
After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> A report at least ten days before the date of the bypass, if possible. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.41(n)(7)]	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that contains a description of the noncompliance, and its causes, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue, and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. [40 CFR 122.41(n)(8)]. Division staff may waive the requirement for a written report on a case-by-case basis.



NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING EFFECTIVE: 04/01/19

Job No. JDF
Dwg No. D4



WAKE COUNTY CONSTRUCTION SEQUENCE
 Jeevan Neupane, PE (919-819-8907)

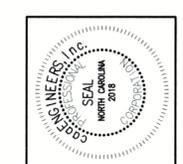
- Schedule a preconstruction conference with the Watershed Manger, Andrew Lake at (919) 594-0895. Obtain a land-disturbing permit.
- Install gravel construction pad, temporary diversions, silt fence, sediment basins or other measures as shown on the approved plan. Clear only as necessary to install these devices. Seed temporary diversions, berms and basins immediately after construction.
- Call Watershed Manager, Andrew Lake at (919) 594-0895 for an onsite inspection to obtain a Certificate of Compliance.
- Begin clearing and grubbing. Maintain devices as needed. Rough grade site.
- Install storm sewer, if shown, and protect inlets with block and gravel inlet controls, sediment traps or other approved measures as shown on the plan. Begin construction, building, etc.
- Stabilize site as areas are brought up to finish grade with vegetation, paving, ditch linings, etc. Seed and mulch denuded areas per Ground Stabilization Time Frames.
- When construction is complete and all areas are stabilized completely, call Watershed Manager, Andrew Lake at (919) 594-089 for site inspection.
- If site is approved, remove temporary diversions, silt fence, sediment basins, etc., and seed or stabilize any resulting bare areas. All remaining permanent erosion control devices, such as velocity dissipators, should now be installed.
- When vegetation has become established, call for a final site inspection by the Watershed Manager, Andrew Lake at (919) 594-0895. Obtain a Certificate of Completion.

WAKE COUNTY STOCKPILE REQUIREMENTS

- A 25-foot temporary maintenance and access easement shall be provided around all proposed stockpiles.
- Stockpiles shall be set back a minimum of 25' from adjacent property lines.
- Stockpile height shall not exceed 35 feet.
- Stockpile slopes shall be 2:1 or flatter.
- Approved BMPs shall be provided to control any potential sediment loss from stockpile.
- Stockpiling materials adjacent to a ditch, drainageway, watercourse, wetland, stream buffer, or other body of water shall be avoided unless an alternative location is demonstrated to be unavailable.
- Any concentrated flow likely to affect the stockpile shall be diverted to an approved BMP.
- Off-site spoil or borrow areas must be in compliance with Wake County and State Regulations. All spoil areas over an acre are required to have an approved sediment control plan. Developer/Contractor shall notify Wake County of any offsite disposal of soil, prior to disposal. Fill of FEMA Floodways and Non-encroachment Areas are prohibited except as otherwise provided by subsection 14-19-2 of the Wake County Unified Development Ordinance (certifications and permits required).

STOCKPILE MAINTENANCE REQUIREMENTS

- Seeding or covering stockpiles with tarps or mulch is required to reduce erosion.
- Tarps shall be keyed in at the top of the slope to keep water from running underneath the plastic.
- If a stockpile is to remain for future use after the project is complete, the financially responsible party must notify Wake County to designate a new financially responsible party for the stockpile.
- The approved plan shall provide for the use of staged seeding and mulching on a continual basis while the stockpile is in use.
- A vegetative buffer shall be established and maintained at the toe of the slope (where practical).



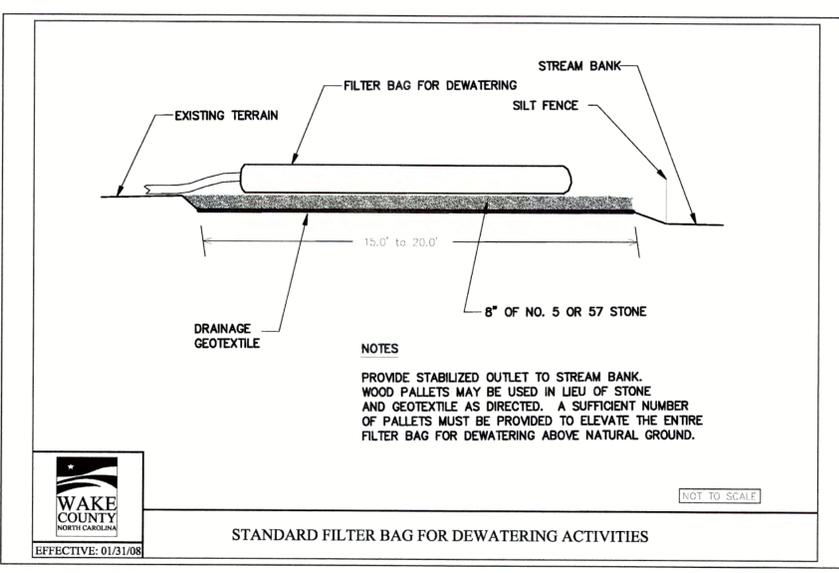
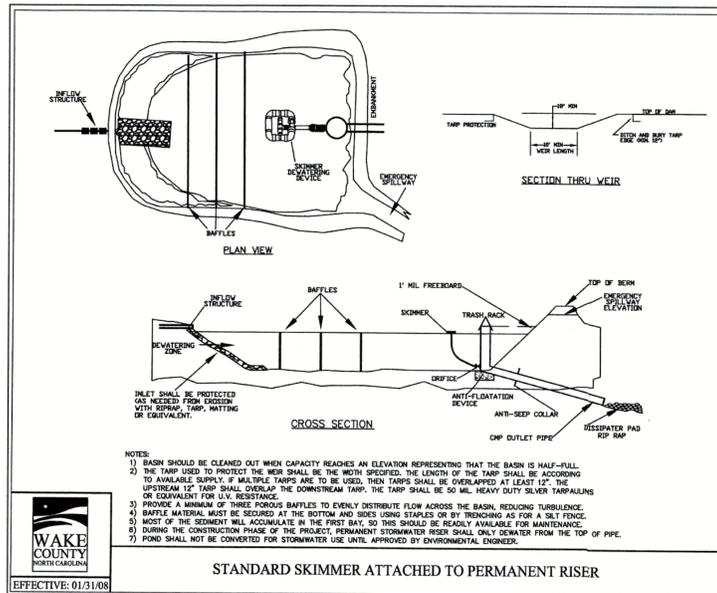
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Michael A. Crowley
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 Date: 2021.02.12 11:43:06 AM
 MICHAEL A. CROWLEY

Standard Details
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

Job No. JDF
 Dwg No. **D5**



Wake County Seeding Specifications

Seedbed Preparation:

- Chisel compacted areas and spread topsoil three inches deep over adverse soil conditions, if available.
- Rip the entire area to six inches deep.
- Remove all loose rock, roots and other obstructions, leaving surface reasonably smooth and uniform.
- Apply agricultural lime, fertilizer and superphosphate uniformly and mix with soil (see mixture below).
- Continue tillage until a well-pulverized, firm, reasonably uniform seedbed is prepared four to six inches deep.
- Seed on a freshly prepared seedbed and cover seed lightly with seeding equipment or outpack after seeding.
- Mulch immediately after seeding and anchor mulch.
- Inspect all seeded areas and make necessary repairs or reseedings within the planting season, if possible. If stand should be more than 50% damaged, re-establish following the original lime, fertilizer and seeding rates.
- Consult S&EC Environmental Engineers on maintenance treatment and fertilization after permanent cover is established.

Mixture:

Agricultural Limestone	2 tons/acre (3 tons/acre in clay soils)
Fertilizer	1,000 lbs/acre - 10-10-10
Superphosphate	500 lbs/acre - 20% analysis
Mulch	2 tons/acre - small grain straw
Anchor	Asphalt emulsion at 300 gals/acre

Seeding Schedule:

For Shoulders, Side Ditches, Slopes (Max 3:1):

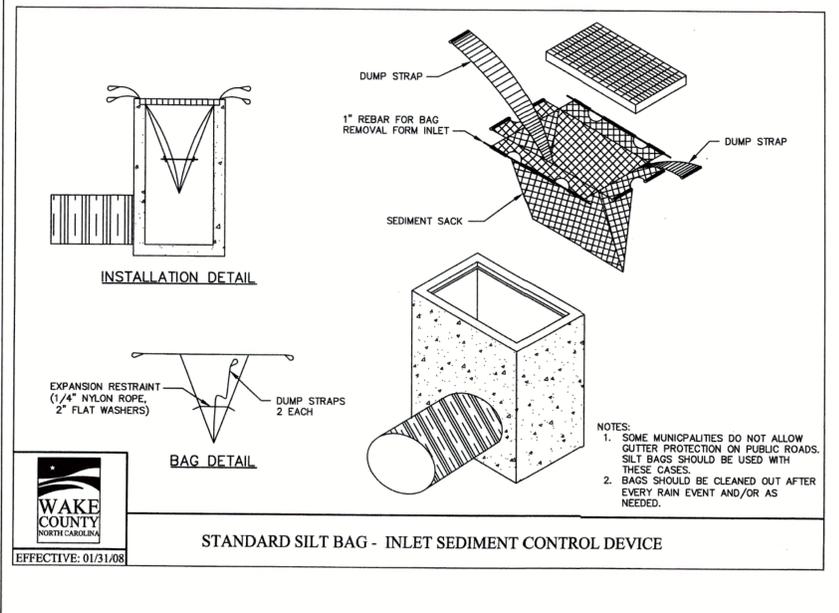
Date	Type	Planting Rate
Aug 15-Nov 1	Tall Fescue	300 lbs/acre
Nov 1-Mar 1	Tall Fescue & Abruzzi Rye	300 lbs/acre
Mar 1-Apr 15	Tall Fescue	300 lbs/acre
Apr 15-Jun 30	Hulled Common Bermudagrass	25 lbs/acre
Jul 1-Aug 15	Tall Fescue AND Browntop Millet or Sorghum-Sudan Hybrids***	125 lbs/acre (Tall Fescue), 35 lbs/acre (Browntop Millet), 30 lbs/acre (Sorghum-Sudan Hybrids)

For Shoulders, Side Ditches, Slopes (3:1 to 2:1):

Date	Type	Planting Rate
Mar 1-Jun 1	Sericea Lespedeza (scarified) and use the following combinations:	50 lbs/acre (Sericea Lespedeza);
Mar 1-Apr 15	Add Tall Fescue	120 lbs/acre
Mar 1-Jun 30	Or add Weeping Love grass	10 lbs/acre
Mar 1-Jun 30	Or add Hulled Common Bermudagrass	25 lbs/acre
Jun 1-Sept 1	Tall Fescue AND Browntop Millet or Sorghum-Sudan Hybrids***	120 lbs/acre (Tall Fescue), 35 lbs/acre (Browntop Millet), 30 lbs/acre (Sorghum-Sudan Hybrids)
Sept 1-Mar 1	Sericea Lespedeza (unhulled - scarified) AND Tall Fescue (Tall Fescue)	70 lbs/acre (Sericea Lespedeza), 120 lbs/acre (Tall Fescue)
Nov 1-Mar 1	AND Abruzzi Rye	25 lbs/acre

*** TEMPORARY: Reseed according to optimum season for desired permanent vegetation. Do not allow temporary cover to grow more than 12" in height before mowing, otherwise, fescue may be shaded out.

- WAKE COUNTY BASIN REMOVAL SEQUENCE**
- Schedule a site meeting with the Environmental Engineer/Consultant to determine if a basin can be removed. Install silt fencing or other temporary erosion control measures as needed prior to removal of the basin.
 - Remove Basin(s) and associated temporary diversion ditches. If culvert pipes need to be extended, perform this operation at this time. Fine grade area in preparation for seeding.
 - Perform seedbed preparation, seed, mulch and asphalt tack any resulting bare areas immediately.
 - Install velocity dissipators and/or level spreaders as required on the Erosion Control Plan.
 - When site is fully stabilized, call Environmental Engineer/Consultant for approval of removing remaining temporary erosion control measures and advice on when site can be issued a Certificate of Completion.
 - Schedule meeting with the Environmental Engineer/Consultant and Municipality to determine when basins may be converted for stormwater use.



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NO.	DATE	REVISION DESCRIPTION	BY
1	05/08/2020	Preliminary Construction Plans	MAC
2	10/23/2020	Revised per 1st review comments	MAC
3	11/25/2020	Town Comments	MAC
4	01/11/2021	Town Comments	MAC
5	02/12/2021	Issued for signature approval	MAC
6	Date	Comment	By
7	Date	Comment	By
8	Date	Comment	By

Michael Crowley
 Date: 2021.02.12
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NCG01 Requirements
 Preserve at Jones Dairy, South
 Preserve at Jones Dairy, LLC
 Rolesville, Wake County, North Carolina

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 Dwg No. **D6**